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ARTICLE XIV.

REPRESENTATION OF MASSACHUSETTS.

The Constitution of Massachusetts has, within the last few years, undergone several important changes. Three of these relate to the basis of representation, two of them affecting the number and distribution of members of the House of Representatives, and the other the apportionment of members of the Senate. The object of this article is to explain the nature and practical operation of these changes.

The original constitution of Massachusetts was established in the year 1780, three years before the acknowledgment of the independence of the state, and of the United States, by Great Britain. An important feature of that constitution was the peculiar connexion which it established between representation and taxation. The system of taxation which was then chiefly relied upon, for the supply of the public treasury, was founded on a valuation, in a great degree arbitrary, of the estates and property of the inhabitants of the respective towns. The amount of taxation for state purposes, imposed upon each town, was regulated by that valuation. It was deemed a salutary restraint upon the imposition of public burdens, to provide that in one branch of the legislature, possessing a concurrent vote in the levying of all taxes, the relative influence of each county in the exercise of this, the most important power of government, should be in proportion to the share of the burden which it should be required to sustain. As a restraint also, upon the natural disposition of members of a legislative body, when enacting laws for defining the powers or the liabilities of their own respective districts, to aim at some undue advantage in the distribution, it was deemed desirable to establish such a counterbalance, between burdens and privileges, as in its operation on the excited and often little scrupulous feelings of parties, or ardent and influential individuals, would tend to prevent

any gross acts of injustice, in the exercise of these important powers. They therefore provided, that in the apportionment of senators among the several districts, which districts consisted, for the most part, of counties, of widely different magnitudes, wealth, and population, the apportionment should be made between them in proportion to the valuation of each, or in other words in the same ratio of distribution, as that in which the annual direct tax was assessed, upon the towns composing the districts. The number of senators was fixed at forty; and to determine what proportion of these forty should be elected by each county, it was required that once in ten years a valuation should be made, of the taxable property, in each town, to serve as the basis of state taxation for the ensuing ten years. This proportion, being first settled as the basis of the equitable distribution of the burden of taxation, upon the people of the commonwealth, according to their actual property, was then required to be taken as the basis also of the apportionment of senators, between the same districts. The principle thus adopted was subjected to one limitation. To guard against an undue ascendency in the legislature, of any one district, there was an express proviso that no district should be entitled to more than six senators. This limitation operated in practice, only upon the county of Suffolk, the valuation of which was increased, from time to time, in consequence of its increase in wealth, in a ratio greatly disproportioned to that of the other parts of the state. By the valuation of 1831, the aggregate taxable property of the county of Suffolk, was $80,244,261, that of the whole commonwealth being $208,908,107. This would give to Suffolk 15 senators, of the 40, if the number to be assigned to a single district were not expressly limited, as above stated. Had not this limitation existed, by which the operation of the principle of the constitution was restrained in its application to something near the proportion of population, it is probable that the constitution would have been sooner changed.

Propositions were repeatedly made in the legislature for an amendment of the constitution, by which the apportionment of senators should be made according to the population of counties, but such an amendment was not deemed of great importance, as the change which would be made by it would not be great in its practical operation, and it was frequently argued in opposition to it, that any change in the representation of the senate, should be accompanied by some adequate reform of the basis of representation in the House of Representatives.

At length, in the session of the legislature of 1839, an amendment was introduced for substituting a system of apportionment of senators according to the population of the districts, in place of that resting on the valuation. This amendment was connected with an important change in the basis of representation in the house, and it was passed

with little opposition in the two branches, and by the constitutional majorities in that and the next succeeding session, and subsequently it was ratified by the vote of a majority of the people, as a part of the constitution of the state. The adoption of this amendment has been announced by proclamation. The census required to be taken to serve as the basis of the new distribution, has been taken and officially published, and a distribution of senators in conformity therewith has been made by the governor and council, and announced by proclamation, for the government of the people in the next election.

By the amendment thus adopted, the existing districts, which were before subject to alteration by the legislature, are made permanent. A new census is required to be taken once in every ten years, and after each census a new distribution of senators is to be made. At least one senator is to be assigned to each district, and with this reservation, the 40 senators are to be distributed among the districts, according to the number of inhabitants in them respectively. The only change produced by this new principle of distribution, in its application under the recent census, compared with that of the last preceding distribution, which was founded on the valuation of 1831, is to deprive three counties of one senator each, and to transfer them to three other counties. Suffolk county, which loses one of these, will probably regain it under the next census, by increase of population. That it may do this, it is only necessary that its relative increase should be equal to that of the last ten years. The following table exhibits the present population of each county, its increase per cent. since the census of 1830, the number of senators in each county under the last valuation, and the number under the new census on the new principle of distribution.

	Population.	*Increase.*	*Senators.* 1832.	*Senators.* 1841.
Suffolk,	86,161	38½ pr. ct.	6	5
Essex,	94,748	14 "	6	5
Middlesex,	104,451	34 "	5	6
Worcester,	93,462	10¾ "	6	5
Hampshire,	30,392	½ "	2	2
Hampden,	37,339	18 "	2	2
Franklin,	28,759	dec. 2 "	1	2
Berkshire,	40,882	8 "	2	2
Norfolk,	50,804	19 "	3	3
Bristol,	59,774	20¾ "	3	3
Plymouth,	46,786	9 "	2	2
Barnstable,	31,662	11 "	1	2
Dukes,	3,860	9¾ "	1	1
Nantucket,	9,512	32 "		
Total,	718,592	17¾ "	40	40

A more important alteration has been made in the constitution of the house of representatives. The principle of representation in that branch, adopted in the original constitution, when the population of the state was comparatively small, was such that each town had a right to increase its representation in proportion to its increase in population—or rather to the increase of its ratable polls, which were of course, nearly in proportion to population. As a check against a too numerous and burdensome representation, under a provision which authorized one representative for 150 polls, and an additional representative for each additional 225 polls, the practice prevailed, for many years, from the establishment of the constitution, to require each town to refund, in the shape of a tax levied upon it, the amount of the per diem compensation paid to its representatives. This provision had the effect of preventing the towns, in general, from electing the full number of representatives to which they were entitled, except in cases of strong political excitement, or where the towns had some particular object to carry, requiring the attention of a full representation. The larger towns usually sent but a third or quarter of the number to which they were entitled—the middling sized towns sent one, and the smaller towns sent one occasionally. This restriction was removed, within the last ten or twelve years, by the adoption of the practice by the legislature, of paying the members of the house of representatives out of the public treasury, and refusing to require the towns to refund the amount so paid. The consequence was, that the number of members elected increased to a very embarrassing extent. According to the number of polls returned in 1831, the number of representatives which the towns had a right to choose, was 636, and this number increased from year to year, and in 1837 it exceeded 700. A house of representatives of such undue dimensions was not merely inconvenient, and costly, but it was a positive absurdity. It was far too numerous to admit of the convenient, orderly, and judicious despatch of business. It reduced to almost nothing the feeling of responsibility of members for the decisions of the house, and rendered a regular and intelligible discussion of the subjects of legislation almost impracticable. The great and intolerable defects of the system had long been felt, by all persons who had given any attention to the proceedings of the legislature, and frequent efforts were made from time to time to amend it. The insuperable obstacle to every plan of amendment was, that the representatives, through whose agency alone an amendment could be effected, were tenacious in maintaining the claim of each town, to the privilege of separate representation. So long as this claim was conceded, it was obvious that no material amendment could be made, since the number of towns exceeded three hundred—a number far too great, if each town were permitted to choose one

member only ; and every principle of equality required, that if the small towns were allowed each a member, the large towns must be allowed several. Many projects were brought forward, at different periods, and discussed, and several of them passed in the legislature through some of the stages required in the adoption of an amendment. They were all deficient in two particulars. They proposed an entirely inadequate rate of reduction in the members of the house, and a great inequality in the distribution. At length, in the years 1836 and 1837, several previous amendments having thus successively failed, a plan of amendment was adopted, by which a considerable reduction in the number of members was effected, at the expense of considerable inequality in the principle of distribution. This amendment recognized the principle that the smallest class of towns, instead of being every year represented by a member of their own choice, should in each period of ten years, have the right of choosing a member for such number of years only, as should bear a just proportion to their population. Every town having three hundred ratable polls was entitled to choose a member every year; but a town with but half that number of polls, could choose one for five only of the succeeding ten years; a town having six-tenths of that number would choose one six years in the ten, and so on. Each town, after being allowed one member, for 300 ratable polls, was entitled to an additional member for every additional 450 polls, and also to an addition of one, for so many years in the ten as would correspond with its surplus portion.

The effect of this amendment, in comparison with the principles of the original constitution, was to reduce the number of members which towns might permanently elect, the number of polls which gave a right to choose one, being changed from 150 to 300 ; but the reduction thus made was in a great degree countervailed, by introducing the principle of fractional representation, by which a town not entitled by its number of polls to the right of permanent representation, was allowed a representative for such part of each succeeding ten years, as should be equal to the tenth parts of the representative number, in its number of polls. This amendment, in granting to the small towns a compensation for the loss of unrepresented fractions, which would result from the strict application of a fixed ratio of representation according to the population, or polls of each town, so as to put them on an equal footing with the large towns, in fact granted them a double compensation. It gave them the advantage of a smaller ratio—300 polls only being required to give the privilege of one representative, and 450 for each additional one—and also the advantage of the fractional representation, which would have been a full equivalent, had one ratio been applied throughout.

The practical application of this amendment in regulating the

representation of the several towns, as compared with that which prevailed under the original constitution, is illustrated in the annexed table. Its effect, as had been foreseen by those who had carefully examined it during its passage, was to produce a very inadequate reduction in the excessive numbers of the house. It will be perceived that it gave an average number of more than five hundred representatives, and it was further objectionable, in giving a considerable latitude of increase, on those years in which the towns should elect to exercise their right of fractional representation.

The public, therefore, were not satisfied with this amendment. The excessive number of members which thronged and overburdened the house, with the very heavy expense which, in consequence of the numbers, and the protracted sessions, was entailed on the state, produced a strong conviction that a further change was necessary. The prevalence of this conviction, together with the very general inclination which prevailed among the political reformers to make a change in the basis of senatorial representation, gave rise, in the session of 1839, to a renewed effort to effect a more thorough amendment in the constitution of both branches. This effort produced the result which has been already in part described. Several articles of amendment, proposing changes in regard to the organization of the council, the senate and the house, were adopted by the requisite majorities in that and the succeeding session, and were ratified by the people. These articles of amendment have been published at length. [Page 117 of the Chronicle.]

For the purpose of illustrating the effect of this amendment on the representation of the several towns of the commonwealth, according to the census taken for the purpose of carrying it into operation, in comparison with the operation of the two former constitutions—and for the purpose also of exhibiting a comparison of the population of the several towns of the commonwealth, as determined by each of the three last enumerations, we present the following table.

The *first* column shows the population of each town and county, as ascertained by the U. S. census of 1830, which was in fact taken in 1831. The census is here given as corrected at the office of the secretary of state of the United States, and officially published. It is remarkable that this census has been usually very incorrectly published, from an incorrect copy which happened to be first printed. The *second* column shows the number of representatives to which each town was entitled under the old constitution, according to the number of polls returned by the assessors in 1831. The *third* column shows the population as it was ascertained by the state census of 1837. The *fourth* column shows the number of representatives to which each town was entitled under the amended constitution of 1837, according to the return of ratable polls which was made, to

serve as the basis of distribution for the then succeeding ten years. The whole numbers indicate the number of representatives which the several towns were entitled to elect every year, and the decimal parts indicate the number of years in the ten, from 1837 to 1846, inclusive, in which the several towns were entitled to choose one additional representative. The *fifth* column shows the population of each town according to the census taken in June last, in obedience to the last amendment of the constitution. The *sixth* column shows the number of representatives which each town is entitled under the amendment, to choose every year during the next ten years. The *seventh* column shows the number of years in the next ten, in which the several towns are entitled to choose one representative. In addition to the number indicated, in this last column, every town has a right to choose one representative in each year in which the valuation is settled.

It will be perceived on a comparison of the representation of the different counties, as exhibited in this table, that with all the precision which is attempted in the distribution, by the aid of the fractional representation, the apportionment between the different sections of the commonwealth, by the amendments, is not equal—that is, the distribution is not in proportion to population. The original constitution was founded on a principle nearly correct, and in its practical application it led to a result very nearly equal. It will be perceived by looking over the table, that it gave, with little variation, one representative to something less than a thousand inhabitants, and the aggregates from the counties are in the same proportion. The amendments give results quite different. This difference has not arisen from accident, nor from the increase of the ratio, but from the adoption of a principle, which necessarily produces an inequality. The new amendment is more unequal than that which is superseded by it. This arises in part from the change of the basis from polls to population.

Towns.	Population, 1830.	Representation, 1831.	Population, 1837.	Representation, 1838.	Population, 1840.	Representation, 1841.	Tenths. 1841.
SUFFOLK—							
Boston,	61,392	63	80,325	56.6	83,379	35	
Chelsea,	771	1	1,659	1.5	2,182	1	
2 towns,	62,163	64	81,984	58.1	86,161	36	
ESSEX—							
Amesbury,	2,445	3	2,567	1.8	2,580	1	
Andover,	4,530	5	4,878	3.2	4,951	2	
Beverly,	4,073	4	4,609	3	4,686	2	
Boxford,	935	1	908	.8	964		.5
Bradford,	1,856	2	2,275	1.5	2,153	1	
Danvers,	4,228	4	4,804	3.5	5,140	2	
Essex,	1,333	1	1,402	1.1	1,432	1	
Gloucester,	7,510	8	8,822	6	6,394	3	
Rockport,					2,738	1	
Hamilton,	741	1	827	.6	823		.5
Haverhill,	3,896	4	4,726	3.4	4,373	2	
Ipswich,	2,949	3	2,855	2	2,958	1	
Lynn,	6,138	7	9,323	6.2	9,075	4	
Lynnfield,	617	1	674	5	689		.4
Manchester,	1,236	1	1,346	1.2	1,266	1	
Marblehead,	5,159	6	5,549	3.5	5,539	2	
Methuen,	2,006	2	2,463	1.9	2,232	1	
Middleton,	607	1	671	.6	642		.4
Newbury,	3,603	4	3,771	2.4	3,889	2	
Newburyport,	6,375	6	6,741	3.9	7,124	3	
W. Newbury,	1,586	2	1,448	1.3	1,553	1	
Rowley,	2,044	2	2,444	2	1,230	1	
Georgetown,					1,553	1	
Salem,	13,895	14	14,985	8.5	15,162	6	
Salisbury,	2,519	3	2,675	1.9	2,696	1	
Saugus,	960	1	1,123	1	1,202	1	
Topsfield,	1,010	1	1,049	.7	1,067		.6
Wenham,	611	1	698	.7	693		.4
28 towns,	82,859	88	93,689	63.5	94,748	40	2.8
MIDDLESEX—							
Acton,	1,128	1	1,071	.9	1,126		.7
Ashby,	1,240	1	1,201	1	1,242	1	
Bedford,	685	1	858	.8	901		.5
Billerica,	1,374	1	1,498	1.1	1,527	1	
Boxborough,	474	1	433	.3	440		.2
Brighton,	972	1	1,337	1.2	1,405	1	
Burlington,	446	1	522	.5	510		.3
Cambridge,	6,072	7	7,631	5	8,127	3	
Carlisle,	566	1	596	.5	563		.3
Charlestown,	8,783	8	10,101	6.3	10,872	5	

Towns.	Population, 1830.	Representation, 1831.	Population, 1837.	Representation, 1838.	Population, 1840.	Representation, 1841.	Tenths. 1841.
Chelmsford,	1,387	2	1,613	1.4	1,595	1	
Concord,	2,017	2	2,023	1.4	1,800	1	
Dracut,	1,615	2	1,898	1.3	2,222	1	
Dunstable,	593	1	570	.5	587		.3
Framingham,	2,313	2	2,881	1.9	2,965	1	
Groton,	1,925	2	2,057	1.5	2,085	1	
Holliston,	1,304	2	1,775	1.5	1,734	1	
Hopkinton,	1,809	2	2,166	1.7	2,262	1	
Lexington,	1,543	2	1,622	1.3	1,559	1	
Lincoln,	709	1	694	.6	711		.4
Littleton,	947	1	876	.8	929		.5
Lowell,	6,474	8	18,010	9	20,981	9	
Malden,	2,010	2	2,303	1.9	2,350	1	
Marlborough,	2,077	2	2,089	1.5	2,092	1	
Medford,	1,755	2	2,075	1.7	2,275	1	
Natick,	890	1	1,221	1	1,282	1	
Newton,	2,376	2	3,037	2.2	3,027	1	
Pepperell,	1,440	1	1,586	1.4	1,541	1	
Reading,	1,806	2	2,144	1.8	2,187	1	
Sherburne,	899	1	1,037	1	1,014		.6
Shirley,	991	1	967	.8	966		.6
South Reading,	1,311	2	1,488	1.3	1,000	1	
Stoneham,	732	1	932	1	1,007		.6
Stow,	1,220	1	1,134	1	1,205	1	
Sudbury,	1,423	2	1,388	1.1	1,376	1	
Tewksbury,	1,523	2	907	.7	880		.5
Townsend,	1,506	1	1,749	1.2	1,764	1	
Tyngsborough,	822	1	870	.8	820		.5
Waltham,	1,857	2	2,287	1.6	2,593	1	
Watertown,	1,641	2	1,739	1 4	1,896	1	
Wayland,	944	1	931	.7	954		.5
W. Cambridge,	1,230	1	1,308	1.2	1,338	1	
Westford,	1,329	1	1,451	1	1,426	1	
Weston,	1,091	1	1,051	1	1,053		.6
Wilmington,	731	1	795	·7	831		.5
Woburn,	1,977	2	2,643	2.1	2,931	1	
46 towns,	77,961	85	98,565	70.8	104,541	44	7.6
WORCESTER—							
Ashburnham,	1,402	2	1,758	1.4	1,653	1	
Athol,	1,325	1	1,603	1.2	1,568	1	
Auburn,	690	1	1,183	1.5	619		.3
Barre,	2,503	3	2,713	1.9	2,738	1	
Berlin,	692	1	724	.6	772		.4
Bolton,	1,253	1	1,185	1	1,182		.7
Boylston,	820	1	821	.7	812		.5
Brookfield,	2,342	3	2,514	1.9	2,306	1	

Towns.	Population, 1830.	Representation, 1831.	Population, 1837.	Representation, 1838.	Population, 1840.	Representation, 1841.	Tenths. 1841.
Charlton,	2,173	2	2,469	2.3	2,060	1	
Dana,	623	1	660	.5	685		.4
Douglas,	1,742	2	1,713	1.3	1,605	1	
Dudley,	2,155	2	1,415	1.2	1,333	1	
Fitchburg,	2,169	2	2,662	1.9	2,570	1	
Gardner,	1,023	1	1,276	1.1	1,235	1	
Grafton,	1,889	2	2,910	2.1	2,877	1	
Hardwick,	1,885	2	1,818	1.2	1,775	1	
Harvard,	1,600	2	1,566	1.2	1,571	1	
Holden,	1,719	2	1,789	1.3	1,880	1	
Hubbardston,	1,674	2	1,780	1.4	1 764	1	
Lancaster,	2,014	2	1,903	1.3	2,013	1	
Leicester,	1,782	2	2,122	1.6	1,656	1	
Leominster,	1,930	2	1,944	1.4	2,000	1	
Notown,	69						
Lunenburg,	1,317	1	1,250	.9	1,218	1	
Mendon,	3,152	4	3,657	2.5	3,536	1	
Milford,	1,360	2	1,637	1.3	1,795	1	
Milbury,	1,611	2	2,153	1.8	2,129	1	
New Braintree,	825	1	780	.7	763		.4
Northborough,	992	1	1,224	.9	1,221	1	
Northbridge,	1,053	1	1,409	1.1	1,336	1	
N. Brookfield,	1,241	2	1,569	1.3	1,468	1	
Oakham,	1,010	1	1,109	.9	1,039		.6
Oxford,	2,034	2	2,047	1.7	1,656	1	
Paxton,	597	1	619	.6	665		.4
Petersham,	1,696	2	1,731	1.3	1,812	1	
Princeton,	1,346	1	1,267	1	1,332	1	
Phillipston,	932	1	887	.8	877		.5
Royalston,	1,493	1	1,629	1.2	1,635	1	
Rutland,	1,276	1	1,265	1	1,275	1	
Shrewsbury,	1,386	2	1,507	1.3	1,473	1	
Southborough,	1,080	1	1,113	1	1,134		.7
Southbridge,	1,444	2	1,740	1.4	1,991	1	
Spencer,	1,618	2	2,085	1.2	1,557	1	
Sterling,	1,794	2	1,650	1.2	1,653	1	
Sturbridge,	1,688	2	2,004	1.5	1,886	1	
Sutton,	2,186	2	2,457	1.8	2,330	1	
Templeton,	1,552	2	1,690	1.4	1,745	1	
Upton,	1,167	1	1,451	1.2	1,179	1	
Uxbridge,	2,086	2	2 246	1.7	1,948	1	
Warren,	1,189	1	1,196	1	1,280	1	
Webster,			1,210	.9	1,346	1	
Westborough,	1,438	2	1,612	1.3	1,616	1	
W. Boylston,	1,055	1	1,330	1.1	1,202	1	
Westminster,	1,696	2	1,640	1.3	1,660	1	

Towns.	Population, 1830.	Representation, 1831.	Population, 1837.	Representation, 1838.	Population, 1840.	Representation, 1841.	Tenths. 1841.
Winchendon,	1,463	1	1,802	1.3	1,679	1	
Worcester,	4,173	5	7,117	5.2	7,06	3	
55 towns,	84,355	93	96,551	74.8	93,462	47	4.9
HAMPSHIRE—							
Amherst,	2,631	3	2,602	1.7	2,415	1	
Belchertown,	2,491	3	2,598	1.8	2,505	1	
Chesterfield,	1,416	1	1,158	.7	1,204	1	
Cummington,	1,261	1	1,204	1	1,214	1	
East Hampton,	745	1	793	.5	724		.4
Enfield,	1,056	1	1,058	1	931		.5
Granby,	1,064	1	922	.8	950		.5
Goshen,	617	1	560	.5	563		.3
Greenwich,	813	1	842	.7	850		.5
Hadley,	1,686	2	1,805	1.4	1,840	1	
Hatfield,	893	1	937	.8	915		.5
Middlefield,	720	1	710	.6	1,395	1	
Northampton,	3,613	4	3,576	2.4	3,672	2	
Norwich,	795	1	714	.5	746		.4
Pelham,	904	1	957	.7	1,000		.6
Prescott,	758	1	788	.6	781		.4
Plainfield,	984	1	865	.7	926		.5
South Hadley,	1,185	1	1,400	1.1	1,422	1	
S. Hampton,	1,244	1	1,216	1	1,158		.7
Ware,	2,045	2	2,403	1.6	1,955	1	
W. Hampton,	918	1	818	.7	752		.4
Williamsburg,	1,236	1	1,345	1	1,289	1	
Worthington,	1,179	1	1,142	.9	1,185		.7
23 towns,	30,254	31	30,413	22.7	30,392	11	6.4
HAMPDEN—							
Blandford,	1,590	2	1,443	1.1	1,512	1	
Brimfield,	1,599	2	1,518	1.1	1,434	1	
Chester,	1,407	1	1,290	1.1	1,412	1	
Granville,	1,649	2	1,439	1.2	1,284	1	
Holland,	453	0	495	.4	436		.2
Longmeadow,	1,257	1	1,251	1	1,266	1	
Ludlow,	1,327	1	1,329	.9	1,365	1	
Monson,	2,264	2	2,179	1.3	2,102	1	
Montgomery,	579	1	497	.4	656		.4
Palmer,	1,237	1	1,810	1.3	2,150	1	
Russell,	507	0	475	.5	1,090		.6
Southwick,	1,355	1	1,291	1.1	1,211	1	
Springfield,	6,784	7	9,234	5.7	11,013	5	
Tolland,	723	1	570	.5	587		.3
Wales,	665	1	738	.6	718		.4
Westfield,	2,940	3	3,039	2.1	3,640	2	

Towns.	Population, 1830.	Representation, 1831.	Population, 1837.	Representation, 1838.	Population, 1840.	Representation, 1841.	Tenths. 1841.
W. Springfield,	3,270	3	3,227	2.2	3,707	2	
Wilbraham,	2,034	2	1,802	1.5	1,846	1	
18 towns,	31,639	31	33,627	24	37,339	19	1.9
FRANKLIN—							
Ashfield,	1,732	2	1,656	1.3	1,579	1	
Bernardstown,	918	1	878	.7	924		.5
Buckland,	1,039	1	1,051	.8	1,110		.7
Charlemont,	1,065	1	994	.9	1,181		.7
Coleraine,	1,877	2	1,998	1.4	1,930	1	
Conway,	1,563	2	1,445	1.1	1,294	1	
Deerfield,	2,003	2	1,952	1.4	1,934	1	
Erving,	419	0	292	.2	294		.1
Gill,	864	1	809	.5	778		.4
Greenfield,	1,540	1	1,840	1.3	1,754	1	
Hawley,	1,047	1	985	.9	931		.5
Heath,	1,199	1	953	.6	904		.5
Leverett,	939	1	902	.7	896		.5
Leyden,	796	1	656	.5	646		.4
Monroe,	265	0	232	.1	260		.1
Montague,	1,152	1	1,260	1	1,288	1	
New Salem,	1,889	2	1,255	1	1,275	1	
Northfield,	1,757	2	1,605	1.2	1,658	1	
Orange,	880	1	1,543	1.2	1,492	1	
Rowe,	716	1	688	.6	700		.4
Shelburne,	995	1	1,018	.8	1,034		.6
Shutesbury,	997	1	816	.7	997		.6
Sunderland,	666	1	729	.7	698		.4
Warwick,	1,150	1	1,111	.8	1,154		.7
Wendell,	875	1	847	.7	844		.5
Whately,	1,111	1	1,140	.9	1,104		.6
26 towns,	29,501	30	28,665	22	28,759	9	8.2
BERKSHIRE—							
Adams,	2,649	3	4,191	2.6	3,639	2	
Alford,	512	0	441	.4	519		.3
Becket,	1,063	1	957	.8	1,158		.7
Boston Corner,	64	0					
Cheshire,	1,050	1	924	.7	954		.5
Clarksburgh,	315	0	386	.3	403		.2
Dalton,	827	1	830	.7	1,143		.7
Egremont,	890	1	968	.8	1,036		.6
Florida,	454	0	457	.3	435		.2
Gr't Barrington	2,264	2	2,410	1.6		1	
Hancock,	152	1	975	1	958		.5
Hinsdale,	780	1	832	.7	950		.5
Lanesborough,	1,192	1	1,090	1	1,048		.5

Towns.	Population, 1830.	Representation, 1831.	Population, 1837.	Representation, 1838.	Population, 1840.	Representation, 1841.	Tenths. 1841.
Lee,	1,825	2	2,095	1.5	2,281	1	
Lenox,	1,359	1	1,275	1	1,323	1	
Mt. Washington	345	0	377	.3	470		.2
N. Ashford,	285	0	253	.2	229		.1
N. Marlborough	1,656	2	1,570	1.1	1,619	1	
Otis,	1,012	1	1,077	.9	1,158		.7
Peru,	729	1	656	.6	610		.3
Pittsfield,	3,559	4	3,575	2.4	4,060	3	
Richmond,	844	1	820	.7	1,052		.6
Sandisfield,	1,655	2	1,493	1.2	1,451	1	
Savoy,	927	1	917	.7	913		.5
Sheffield,	2,382	2	2 308	1.6	2,322	1	
Stockbridge,	1,580	1	2,036	1.5	1,981	1	
Tyringham,	1,350	1	1,288	1	1,402	1	
Washington,	701	1	758	.6	830		.5
W. Stockbridge	1,209	1	1,244	1.1	1,330	1	
Williamstown,	2,134	2	1,981	1.4	2,076	1	
Windsor,	1,042	1	887	.7	872		.5
Zoar,*	129	0					
30 towns,	37,835	36	39,101	29.4	40,882	15	8.1
NORFOLK—							
Bellingham,	1,102	1	1,159	1	1,045		.6
Braintree,	1,758	2	2,237	1.8	2,118	1	
Brookline,	1,043	1	1,083	1	1,123		.7
Canton,	1,515	2	2,185	1.7	1,928	1	
Cohasset,	1,233	1	1,331	1	1,411	1	
Dedham,	3,117	3	3,532	2.6	3,157	1	
Dorchester,	4,074	4	4,564	2.7	4,458	2	
Dover,	497	0	518	.4	514		.3
Foxborough,	1,165	1	1,416	1.1	1,294	1	
Franklin,	1,662	2	1,696	1.3	1,720	1	
Medfield,	817	2	899	.7	846		.5
Medway,	1,756	1	2,050	1.5	2,051	1	
Milton,	1,576	2	1,772	1.5	1,684	1	
Needham,	1,418	1	1,492	1.1	1,479	1	
Quincy,	2,201	2	3,049	2.5	3,309	1	
Randolph,	2,200	2	3,041	2.3	3,232	1	
Roxbury,	5,247	6	7,493	5	8,310	3	
Sharon,	1,023	1	1,093	.9	1,066		.6
Stoughton,	1,591	2	1,993	1.6	2,062	1	
Walpole,	1,442	1	1,592	1.2	1,465	1	
Weymouth,	2,837	3	3,387	2.4	3,630	2	
Wrentham,	2,698	3	2,817	1.8	2,902	1	
22 towns,	41,972	43	50,399	37.1	50,804	21	2.7

* Zoar is annexed part to Florida, and part to Rowe.

Towns.	Population, 1830.	Representation, 1831.	Population, 1837.	Representation, 1838.	Population, 1840.	Representation, 1841.	Tenths. 1841.
PLYMOUTH—							
Abington,	2,423	3	3,057	2.2	3,144	1	
Bridgewater,	1,855	2	2,092	1.6	2,081	1	
Carver,	970	1	990	.9	999		.6
Duxbury,	2,716	3	2,789	2	2,741	1	
E. Bridgewater,	1,653	2	1,927	1.5	1,944	1	
Halifax,	708	1	781	.7	739		.5
Hanover,	1,303	1	1,435	1.1	1,478	1	
Hingham,	3,387	4	3,445	2.4	3,489	1	
Hanson,	1,030	1	1,058	.8	1,065		.6
Hull,	198	1	180	.1	217		.1
Kingston,	1,321	1	1,371	1.1	1,395	1	
Marshfield,	1,565	2	1,666	1.2	1,664	1	
Middleborough,	5,008	6	5,005	3.4	5,006	2	
N. Bridgewater,	1,953	2	2,701	1.8	2,625	1	
Pembroke,	1,325	2	1,258	1	1,239	1	
Plimpton,	920	1	835	.7	861		.5
Plymouth,	4,758	5	5,030	3.3	5,180	2	
Rochester,	3,556	3	3,570	2.3	3,986	2	
Scituate,	3,468	3	3,764	2.6	3,720	2	
Wareham,	1,885	2	2,166	1.7	2,002	1	
W. Bridgewater	1,042	1	1,145	.9	1,211	1	
21 towns,	43,044	47	46,253	33.3	40,786	20	2.3
BRISTOL—							
Attleborough,	3,215	3	3,396	2.1	3,620	1	
Berkley,	907	1	878	.8	957		.5
Dartmouth,	3,866	4	3,958	2.4	4,092	2	
Dighton,	1,723	2	1,453	1	1,417	1	
Easton,	1,756	2	1,976	1.5	2,076	1	
Fairhaven,	3,034	3	3,649	2.6	3,985	2	
Fall River,	4,158	4	6,352	3.6	6,451	3	
Freetown,	1,909	2	1,779	1.4	1,757	1	
Mansfield,	1,172	1	1,444	1	1,346	1	
New Bedford,	7,592	8	11,304	9	12,585	5	
Norton,	1,479	1	1,530	1.2	1,554	1	
Pawtucket,	1,459	1	1,881	1.5		1	
Raynham,	1,208	1	1,379	1.2	1,319	1	
Rehoboth,	2,459	2	2,202	1.5	2,036	1	
Seekonk,	2,133	2	2,016	1.5	1,831	1	
Somerset,	1,023	1	1,063	.9	1,047		.5
Swanzey,	1,678	2	1,627	1.2	1,421	1	
Taunton,	6,042	6	7,647	4.9	7,524	3	
Westport,	2,779	3	2,618	1.8	2,644	1	
19 towns,	49,592	49	58,152	41.1	59,774	27	1.0

Towns.	Population, 1830.	Representation, 1831.	Population, 1837.	Representation, 1838.	Population, 1840.	Representation, 1841.	Tenths. 1841.
BARNSTABLE—							
Barnstable,	3,974	4	4,017	2.7	4,297	2	
Brewster,	1,418	1	1,534	1.1	2,081	1	
Chatham,	2,130	2	2,271	1.6	2,278	1	
Dennis,	2,317	2	2,750	1.9	2,792	1	
Eastham,	970	1	1,059	.8	944		.4
Falmouth,	2,548	3	2,580	1.8	2,604	1	
Harwich,	2,453	2	2,771	1.8	2,860	1	
Orleans,	1,789	2	1,936	1.4	1,953	1	
Provincetown,	1,710	2	2,049	1.8	2,101	1	
Sandwich,	3,361	3	3,579	2.4	3,020	2	
Truro,	1,547	2	1,806	1.4	1,916	1	
Wellfleet,	2,046	2	2,303	1.6	2,306	1	
Yarmouth,	2,251	2	2,454	1.8	2,520	1	
13 towns,	28,514	28	31,109	22.1	31,662	14	.4
DUKES—							
Chilmark,	691	1	699	.7	544		.3
Edgartown,	1,509	2	1,625	1.4	1,803	1	
Tisbury,	1,317	1	1,461	1.1	1,513	1	
3 towns,	3,517	4	3,785	3.2	3,860	2	.3
NANTUCKET—							
Nantucket,	7,202	7	9,048	6	9,512	4	
RECAPITULATION. *Counties.*							
Suffolk,	62,163	64	81,984	58.1	86,161	36	
Essex,	82,859	88	93,689	63.5	94,748	40	2.8
Middlesex,	77,961	85	98,565	70.8	104,451	44	7.6
Worcester,	84,355	93	96,551	74.8	93,462	47	4.9
Hampshire,	30,254	31	30,413	22.7	30,392	11	6.4
Hampden,	31,639	31	33,627	24.0	37,339	19	1.9
Franklin,	29,501	30	28,665	22.0	28,759	9	8.2
Berkshire,	37,885	36	39,101	29.4	40,882	15	8.1
Norfolk,	41,972	43	50,399	37.1	50,804	21	2.7
Plymouth,	43,044	47	46,253	33.3	46,786	20	2.3
Bristol,	49,592	49	58,152	41.1	59,774	27	1.0
Barnstable,	28,514	28	31,109	22.1	31,662	14	.4
Dukes,	3,517	4	3,785	3.2	3,860	2	.3
Nantucket,	7,202	7	9,048	6.0	9,512	4	.0
14 counties,	610,404	636	701,331	508.1	718,592	309	46.6

The number of towns in 1841 which are not entitled to one representative permanently, but are entitled to one for one or more years in every ten, is 99. These 99 towns are also entitled, by an arbitrary provision of the amendment, for which there appears to be

no good reason, to send one representative in 1841, and in each year when the valuation is to be settled. This increases the number of members on that year to 408. If we distribute the fractional representation equally between the nine remaining years of the ten, it makes an average of 51 members, from towns not constantly represented. This number makes the average annual number of members of the house of representatives, under the constitution as now amended, 360.

The average representation of the several counties, in proportion to population, under the present amendment, as shown by the foregoing table, throwing out of consideration the extra number allowed to the 99 small towns on the year of the valuation, is as follows, viz.

Suffolk, one in - - -	2,393	Berkshire, one in - -	1,769
Essex, " - - -	2,214	Norfolk, " - - -	2,143
Middlesex, " - - -	2,024	Plymouth, " - - -	2,098
Worcester, " - - -	1,800	Bristol, " - - -	2,134
Hampshire, " - - -	1,749	Barnstable, " - - -	2,198
Hampden, " - - -	1,786	Dukes, " - - -	1,678
Franklin, " - - -	1,672	Nantucket, " - - -	2,378

Average of the whole state, one in - - - - 2,020
" of the five western counties, one in - - - 1,768
" of the eight seaboard counties, one in - - 2,209

It will be perceived, from this comparison, that the representation of the county of Suffolk, as compared with population, is less than three to four, in proportion to that of the five western counties; and that of the seaboard counties taken together, compared with the five western counties, is in the proportion of four to five. This is the result of the inequality of principle, above stated, in the basis of distribution. The inland counties have at present an advantage in the distribution of senators—an advantage, however, which is accidental, and not the result of an unequal basis.

ARTICLE XV.

RAIL-ROADS OF MASSACHUSETTS.

(Continued from page 199.)

A charter for the establishment of the Eastern rail-road was granted, April 14, 1836, to George Peabody and his associates. Some previous attempts had been made to procure the construction of a rail-road between Boston and Salem, and there was some controversy between rival applicants for a charter, in regard to the most eligible route. A party of petitioners caused a survey to be made of a more

inland route than that which was finally adopted, pursuing, in some parts, nearly the course of the Salem turnpike, passing through Charlestown, and entering the city by a bridge over Charles river. This route was circuitous, and besides encountering deep cutting at some of the elevations, it would have been subject to much steeper inclinations than the present route, and would have encountered a very heavy expense for land and damages, in passing the thickly settled parts of Charlestown, as well as in the erection of bridges across the Malden and Charles rivers.

The route selected by the present company, and which obtained the sanction of the legislature, passes near the sea, and for a considerable extent across marshes, and the mouths of creeks, and over arms of the sea, but it possesses the advantage of being remarkably direct, free from short curves, and very nearly level, as well as crossing little land of high value. The principal objections to the route were the necessity of extensive and costly embankments and bridges, and of terminating the road at East Boston, formerly called Noodle's Island, where it is separated from the main land of the city by a ferry, over a part of the harbor too wide and too deep to admit of the erection of a bridge.

The objection to the ferry is obviated in a great degree by the establishment of steam ferry boats, which run regularly at intervals of five minutes, from Lewis' wharf, near Commercial street, to the termination of the rail-road, in which ferry boats passengers by the rail-road, and crates containing the baggage of passengers, are entitled to a preference.

The rail-road between Boston and Salem consists of about a mile of embankment across arms of the bay, supported on each side by bank walls of heavy masonry; four and a half miles of earth embankment, across salt marshes; four hundred feet of wooden pile bridges; and two thousand feet of truss bridges on stone piers, crossing Chelsea beach, the River of Pines and Saugus river; and about three miles of common embankment, and an equal length of moderate excavation. The grading of the road, and the erection of bridges, between Boston and Salem, were vigorously prosecuted through the whole of 1837, and were finished in the spring of 1838. In the same spring and summer the rails were laid on this part of the road, and it was opened for public use on the 27th of August.

The company were authorized to postpone the completion of the part of the road extending from Salem to the border of New Hampshire, but soon after the opening of the first section of it, a full meeting of the stockholders was held at Salem, and it was resolved, after full consideration, with great unanimity, that they were pledged in good faith to go on, and complete the road as far as Newburyport, and the directors were requested to proceed with all the dispatch

consistent with due economy to complete the road to that point; and to extend it also to the line of the state, whenever satisfactory assurances should be given, that provision would be made for its extension to Portsmouth in New Hampshire.

Preparatory to the commencement of the work, for the extension of the road from Salem to Newburyport, a new location and estimate were made by the engineer. For the purpose of reducing the cost of the grading, a slight increase of curvature was admitted into the line, by which the road was lengthened 300 feet, and some steeper gradients were admitted. The road, as thus located between these two points, has 8 miles of level planes; 5 1-3 miles ascending or descending at a rate of 35 feet in a mile, and 7 miles ascending or descending at various rates at from 4 to 33 feet. Its course is nearly direct, and it has no curves of short radius. It passes through the town of Ipswich, and also through a central part of the town of Newburyport, after crossing to the west side of the turnpike from Boston. The elevation of the principal streets of Newburyport is such as to admit of the passing of the rail-road beneath them, by a sort of tunnel, so that the ordinary travel is not impeded by the passage of the locomotives. It approaches the river at such a level as to require the construction of the viaduct, of a sufficient height to admit of a passage for common carriages at a convenient level beneath it. By an arrangement with the proprietors of the toll bridge, the site and piers of the bridge are taken for the erection of a new bridge, which is to serve the double purpose of affording a passage on the lower level for the common travel, and one for the rail-road track above. Soon after the vote of the stockholders above mentioned, contracts were entered into for grading the road from Salem to Newburyport. This grading was made for a single track only, of a width of 20 feet in the cuts, and 15 feet at the surface on the embankments, except over the marshes, where the embankment was made 20 feet wide. These contracts were executed with such promptness, that the road was ready for the rails in the ensuing summer, between Salem and Ipswich, and in the following spring between Ipswich and Newburyport. The travelling on the road was extended to Ipswich, in December, 1839, and to Newburyport on the 17th of June, 1840.

The form of construction adopted on this rail-road is similar to that of the second track of the Boston and Worcester road, with the exception that the cast iron chairs which support the rails are of greater weight and larger dimensions, and raise the rail to a greater height from the bed of the road. The rails weigh 46 lbs. to a yard, are 4 inches deep, and the chairs are of such form as to raise the top of the rail 7 inches above the upper surface of the sleeper. This admits of the sleeper being entirely covered with gravel, and leaves

an open space between the rail and the gravel bed, sufficient to permit the water to pass off freely, and to admit of its being more readily kept clear of snow. The cross sleepers are of white or red cedar, or of locust. They are laid upon longitudinal sills of hemlock, 4 inches by 12 in dimensions, which is bedded in gravel. The greatest gradients between Boston and Salem have an elevation of 20 feet in a mile, and between Salem and Newburyport, 35 feet.

In the winter of 1839, authority was granted by the legislature to the Eastern rail-road company, to construct a branch of their rail-road leading from Salem to Marblehead. This branch was constructed in the course of the year, and on the 10th of December following it was opened to the public travel. It is 3 miles in length, and its greatest gradient is 35 feet in a mile. It passes over Forest river on a pile bridge of 350 feet in length. A locomotive engine, of a small class, is placed upon this branch, which makes regular passenger trips between Marblehead and Salem, leaving the latter place on the arrival of the trains from Boston.

A charter was obtained from the legislature of New Hampshire in 1836, shortly after the incorporation of the Eastern rail-road in Massachusetts, establishing a company for the purpose of continuing the rail-road from the Massachusetts line to Portsmouth. A company was then formed, and a survey and location of the route were made by Mr. Barney, but the stock was not wholly taken up, and no measures were taken for the prosecution of the work, until 1839. An additional act was then obtained authorizing a new location, with a limitation as to its termination in Portsmouth, and the company was reorganized and the subscription completed. The new company was composed in part of individuals who were proprietors in the Massachusetts company, and a majority of the directors chosen were also directors of the latter company. Col. Fessenden was appointed engineer, and under his direction new surveys of the route were made. He made a report to the directors on two lines, an Eastern and Western. The western line, although a little longer than the other, was recommended by him as entitled to the preference, as having fewer curves, a less extent of bridges, and not crossing any navigable streams. It also passes near a greater amount of population. This route was adopted by the directors, and the grading of the line was soon after contracted for. After leaving the Merrimac river at the Newburyport bridge, the line passes west of the old Salisbury village—after reaching Hampton Falls, leaves the village a third of a mile at the west, and the landing on the east, passes a little west of Old Hampton village to Cedar Swamp in Greenland, and after crossing the Greenland road above the plains proceeds to Portsmouth. The termination was originally fixed near the universalist meeting house, but by authority of a new act of the legisla-

ture passed in 1840, and with the consent of the inhabitants of Portsmouth by vote in town meeting, it is changed to a point in the northerly part of the town, where it may be extended, if it should hereafter be determined so to do, by a bridge over Piscataqua river. The length of the line thus located in New Hampshire is 15 miles and 2570 feet, and from Merrimac river, 19 miles 1080 feet. Of this distance, 18⅔ miles are straight, and the residue curved on a radius not less than a mile. About five miles of the distance are level, and the gradients for the residue vary from 15 to 35 feet per mile; the greatest elevation being about 90 feet above the marsh level. The whole length of the rail road from East Boston to Portsmouth is thus 53 miles, 2390 feet.

The remaining portion of the Eastern rail-road in Massachusetts, intervening between Newburyport and the New Hampshire line, was put under contract for grading, as was also the erection of the bridge over the Merrimac river at Newburyport, in the summer of 1839, to be completed in the following summer. These two portions of this line, from Newburyport to Portsmouth, are now rapidly advancing towards completion. The part of the road now in operation is 34 miles, besides the Marblehead branch. It will probably be completed to Portsmouth before the close of the present year. It runs in its whole length along the sea coast, in many parts in full view of the ocean, and in its whole length but a few miles from it.

The Eastern rail-road passes through one of the most densely peopled portions of Massachusetts, and it has received the greatest number of travellers, for the period of its existence, of any rail-road in the state.

The charter of the Western rail-road corporation was granted in March, 1833, on application of the directors of the Boston and Worcester rail-road corporation to them and their associates, with authority to lay out and construct a rail-road from the western termination of the said road to Springfield, and across the Connecticut river to the western boundary of the state, in a direction to any other rail-road that might be constructed, leading from the county of Berkshire to the Hudson river. The charter contained the powers granted by the other rail-road charters, with a capital stock to consist of not less than 10,000 nor more than 20,000 shares, of $100 each. It was made a condition of the charter that in case more than 20,000 shares should be subscribed, the stockholders of the Boston and Worcester road who might subscribe, should have the privilege in preference to other subscribers, of holding a number of shares equal to the number held by them for the time being in the stock of the Boston and Worcester road. A period of nearly six years was given for the organization of the corporation, and filing the location of the road. Two or three years elapsed before the stock was subscribed and the company organized.

At length subscriptions having been obtained for 20,000 shares, the corporation was organized by the choice of a board of directors, consisting of Thomas B. Wales, Josiah Quincy, Jr., John Henshaw, Justice Willard, Henry Rice, Francis Jackson and George Bliss. In April, 1836, the legislature authorised an increase of the capital stock by the addition of 10,000 shares, and directed the treasurer of the commonwealth, to subscribe, in the name, and on behalf of the commonwealth, for 10,000 shares in the stock, and to pay the assessments which should be laid on the said shares, whenever it should be shown that the corresponding assessments on shares held by private stockholders should be paid. Major William Gibbs McNeil was appointed chief engineer, and captain William H. Swift, resident engineer of the road, and George Bliss, Esq. was appointed general agent of the corporation.

A survey of the whole line of this road had been made under the superintendence of the Board of Directors of Internal Improvement, by James F. Baldwin, Esq. in the year 1828, a report and plan of which survey were then published. Further surveys of that part of the line between Worcester and the Connecticut river, were made after the granting of the charter, and before the organization of the corporation, by Col. Fessenden and his assistant engineers, under the direction of the directors of the Boston and Worcester rail road. Before the final location, however, more full and thorough surveys were made by the engineers of the Western road, and the eastern section from Worcester to Brookfield was finally located and put under contract for grading, in the summer and autumn of 1836. In the year 1837 the work of this section was vigorously prosecuted, and the grading of about 16 miles of it was completed. The rest of the line east of the Connecticut river, was finally located, and mostly put under contract by June of this year. This line passes the valley of the Chickopee river from Brookfield to Wilbraham, and thence crosses the plain to the head of Garden Brook, and thence down this brook to the Connecticut river, which it crosses about half a mile north of the court house in Springfield. The location through the town of Springfield, presented questions of some difficulty, and three routes, besides that to which the preference was given, were carefully surveyed, one by Mill river, one by End brook, and one crossing the Connecticut river at the mouth of the Chickopee; but the route by Garden Brook was preferred, as presenting the most favorable grades, and being the least expensive. Eleven miles of this portion of the road were graded during this season.

Extensive surveys were made in the summers of 1836 and 1837 for determining the location of the road between the Connecticut river and the western border of the state. Besides the route by the channel of Westfield river, through Washington and Pittsfield, a

thorough investigation was made, in hope of finding a less circuitous route, in the direction of Otis or Becket, Lee and Stockbridge. An approximate location and estimate were made, by the most favorable of the southern routes, by the valley of Westfield Little river, and the town of Otis. On comparison with the Westfield river route, it was found to be but little shorter, and this advantage was counterbalanced by passing a principal summit 51 feet higher, an aggregate of elevations 113 feet greater, and consequently a greater extent of steep gradients, and an aggregate curvature greater by 390 degrees. These results left no doubt of the superiority of the northern route, and a decision to this effect was made in August. Some details remained to be settled on certain parts of the line, which were not determined until the commencement of the succeeding year.

In March, 1838, the whole western portion of the road, from Henry's tavern, in Chester, to the state of New York, was put under contract for grading, with a proviso that the commencement of the work on 11 miles of the lighter portion of it, should be deferred until the heavier portions should be considerably advanced. Under these contracts the work was shortly afterwards commenced on 23 miles of the heavy mountain portions, and it has been actively prosecuted ever since. On this portion of the road are deep and difficult rock cuttings, particularly for 11 miles in the Pontoosuc valley, from Henry's in Chester, to the summit, at the source of Westfield river. In 1839 the grading of the rest of the line was put under contract, and a contract was made for the erection of a bridge across the Connecticut river at Springfield. This structure consists of seven spans of wooden truss work, of 180 feet each, supported on abutments, and six piers of massive stone masonry, laid in hydraulic cement. It was found necessary to drive piles for the foundations of the piers in the bed of the river. The piers and abutments are forty feet in height.

The length of the Western rail-road, from its junction with the Boston and Worcester rail-road, to the boundary line of the state of New York, is $116\frac{87}{100}$ miles. The eastern section, extending from Worcester to Springfield, $54\frac{27}{100}$ miles in length, was begun in January, 1837, and was opened for use, Oct. 1, 1839. The western section, $62\frac{8}{100}$ miles in length, was begun in June, 1838, and is not yet opened. The road is graded, in general, for a single track only, 20 feet wide in the cuts and 16 feet on the embankments, except in the deep cuts and on the high embankments, where it is made 26 feet wide, or of sufficient width for a double track. The bridges are also constructed for a double track.

At the commencement of the road in Worcester, its elevation is 470 feet above the level of tide water. At the summit on the eastern section, in Charlton, its elevation is 908 feet above tide water, the cut being there 42 feet deep. From this point it descends to the

level of 40 feet, at Connecticut river. It rises again in proceeding west from Connecticut river, and at the summit in Washington, its elevation is 1432 feet, the cut there being 50 feet. The third summit, in Richmond, is 1072 feet, or 182 feet above the Housatonic valley, east of it. The total amount of ascending gradients, from the eastern extremity to the western, is 2607 feet. The elevation at the state line is 895 feet.

The maximum grade on the eastern section, is 60 feet in a mile, the length of plane being two and a half miles. There is one curve on the eastern section of 1146 feet radius, four of 1432 to 1910, and other curves, 56 in number, from 2865 feet to 11,460 feet radius. On the western section the maximum grade is 79 feet per mile, on a plane of $6\frac{4}{10}$ miles. There are two curves on this section of 1042 feet radius; 3 of 1146; 2 of 1273, and others varying from 1346 to to 11,460 feet.

The rail used throughout in the construction of this road is the edge rail, $3\frac{1}{2}$ inches deep, and with a base 4 inches in width, of a weight of 55 pounds per yard. It is laid upon chesnut sleepers, which are 7 feet in length, 7 inches deep, and 7 to 10 or 12 inches wide. The sleepers are laid upon hemlock sills, which are 8 inches wide and 3 thick. The spikes, of which 12 are used to each rail, are $5\frac{1}{2}$ inches long, $\frac{9}{16}$ of an inch square, and weigh $8\frac{1}{4}$ oz. each. At the end of each rail a cast iron chair or splicing plate is used, which weighs 10 pounds.

Preparatory to laying the rails, in all places where the earth was argillaceous or loamy, it was removed to a depth of $2\frac{1}{2}$ feet below the grade, of a width of 10 feet, and its place was supplied by gravel or sand. Occasional openings were made from this excavation to the side drains. In the rock cuts the rock is removed to the depth of one foot below the grade, and the space is filled in with gravel, to afford a bed for the sills and sleepers. The sills are entirely embedded in gravel, as are also the sleepers with the exception of the upper surface.

The cost of the eastern division, to the end of the year 1839, was $1,972,985. Of this expenditure, $1,633,122 were for the grading, including masonry and bridges; $89,039 for land, damages, and fencing; $61,050 for depot buildings, lands and stations; $89,769 for engineering, salaries and miscellaneous expenses; and $100,604 for engines and cars. The estimated cost of the western section is $2,326,442. The number of engines now in use on the road is six. They weigh, including water, 11 tons, two thirds of which weight bears upon the driving wheels. They were built at Lowell, and cost $7,000 each. Freight engines are building for this road to weigh 14 tons, on 8 wheels, 4 of which are to be coupled.

The original capital stock of the Western rail-road corporation, as has been already stated, was limited to $2,000,000. It was not supposed that this capital would be sufficient to complete the whole road from Worcester to the state of New York. But it was supposed that it would be sufficient to complete the most important portion of the road, extending from the centre of the state to Connecticut river, and that by the time this capital should be expended, on this portion of the work, the public would become so fully persuaded of the importance of the enterprise to the interests of the commonwealth, that means would be found for the completion of the work. This anticipation has been proved to have been well founded. In April, 1836, the legislature, upon the application of the directors, authorised a subscription for 10,000 shares, amounting to $1,000,000, on the part of the state, by which the capital stock of the corporation was increased to $3,000,000. Provision was made for the payment of the assessments on this stock, by the treasurer of the state, from time to time, corresponding with the assessments which should be paid by the private stockholders.

In the following year, in consequence of the disastrous state of commercial affairs in the country, the general embarrassment of business, and the scarcity of money, it was found that a large portion of the private stockholders were unable to pay their assessments, and that if they were levied, and payment were attempted to be enforced, in amounts adequate to sustaining an efficient prosecution of the work upon the rail-road, a great portion of the shares would be abandoned, and it was apprehended that purchasers would not be found sufficient to secure the completion of the work. Under these circumstances an application was made to the legislature for aid, by the grant of such a guaranty by the state, as would enable the corporation to obtain the necessary funds by a loan, to be contracted abroad, on the credit of the state. On this application, the legislature passed an act, by which they authorised the issue of scrip to the amount of $2,100,000, promising payment in London at the expiration of thirty years, with interest semi-annually, at the rate of 5 per cent. per annum. This scrip, to be issued from time to time, was to be delivered to the Western rail-road corporation, to be sold for their account, on the condition that the share holders should first pay thirty dollars on each share of the capital stock—that the rail-road and the whole property of the corporation should be pledged for the performance of its engagements—that the proceeds of the sale of the scrip, above the nominal par, should be invested in a sinking fund on interest, for the redemption of the principal of the stock at the expiration of the thirty years, and that the corporation shall provide funds for the payment of the interest semi-annually, as it

shall accrue, together with a further sum of one per cent. per annum to be added to the sinking fund.

In the course of the year 1838, the six first assessments of $5 per share on the capital stock having been chiefly paid, amounting to nearly $900,000, portions of the scrip were issued from time to time, payable in London in sterling money, and sold in England, at a premium varying from 2½ to 4 per cent., and averaging 3¼ per cent. This premium, together with the premium on the exchange drawn against the sales over the nominal par of $4 44⅔ to the pound sterling, was paid over to the commissioners of the sinking fund, and invested in conformity with the conditions of the grant. The residue of the proceeds was applicable to the prosecution of the work. The amount of receipts on account of scrip, in 1838, was $721,670. The amount received from the same source, up to January, 1840, was $1,883,114.

In the mean time it was ascertained, that a further sum of about $1,200,000 beyond the 3,000,000 already provided for, would be necessary for the completion of the road, and it was believed that this sum could not be realized without ruinous sacrifices, from assessments on the shares. An application was made to the legislature, in the winter of 1839, for a further loan of the credit of the state, to the amount above mentioned, on the same terms as the former loan. This application was granted on the condition that the corporation should levy two further assessments of $5 each, upon the shares, of which $75,000 at least should be paid before the issue of the first $400,000 of scrip, and the further sum of $75,000 before the second sum of $400,000 should be issued. A further condition was also attached to this grant, viz: that the commonwealth may at any time purchase the road and all the property of the corporation, by paying therefor to the stockholders the cost, and interest at the rate of 7 per cent. per annum from the dates at which the assessments were paid by them. These conditions of the act were assented to by the corporation. The capital thus provided for the completion of the work amounts to $4,500,000, on the supposition that only $40 per share are levied upon the capital stock, viz: $1,200,000 from assessments, $2,000,000 from the first grant of scrip, and $1,200,000 from the second grant.

By an act of the legislature of Connecticut, passed in 1832, a company was formed and empowered to raise a capital of a million of dollars, with authority to construct a rail road from the city of Norwich to the border of the state, in a direction towards Boston. In the following year an act was passed by the legislature of Massachusetts, on the application of the principal proprietors in the Connecticut company, incorporating a company with authority to raise a capital of $400,000, and to construct a rail-road from the termination of

the Boston and Worcester rail-road, in Worcester, and to meet the Norwich rail-road at the dividing line of the two states. Subsequently, in 1836, by a joint act of the legislatures of both states, the two companies were united into one corporation, with the necessary powers for constructing and carrying into operation a rail-road from Norwich to Worcester.

Previously to the union of the two companies the country had been fully explored, and the necessary surveys had been made for the selection of the route. A survey was made in 1832, by Capt. Swift, of the U. S. Topographical Engineers, and other surveys were subsequently made for the purpose of perfecting the route before its final location. The route selected leaves Norwich by the bank of the Sketucket river, which it follows for a distance of three miles, to its junction with the Quinebaug; it proceeds thence along the valley of this latter river, through the towns of Lisbon, Griswold, Plainfield, Brooklyn, Killingly and Thompson, to the southern line of Massachusetts; and thence along the valley of the French river, through the towns of Dudley, Webster and Oxford to Auburn, where it reaches the summit between the waters of the last named river, and the Blackstone; and from the summit it proceeds by a gradual descent to the Blackstone, and after crossing that river, by a gradual ascent to its termination near the centre of the town of Worcester. Its general course is direct; its curves are of a radius of 3000 to 12,000 feet, with the exception of several near Norwich, which are of a radius of 1,000 feet. The length of the road is $58\frac{9}{10}$ miles, the whole of which for near 52 miles from Norwich, is either level or gradually ascending. At the summit in Auburn, it reaches an elevation of 552 feet above the level of tide water; from that point it descends 94 feet in a distance of about six miles; in its course thence to its termination in Worcester, it rises $12\frac{1}{2}$ feet in a distance of a little more than a mile. Its greatest inclination is 20 feet in a mile. Two-thirds of the length of road, or thirty-nine miles, are within the state of Connecticut, and the other third, or a length of nineteen and a half miles, in Massachusetts.

The first division of the road was put under contract, for the grading and masonry, from Norwich to Jewett's city, a distance of nine miles, in the winter of 1835, and this portion of the work was nearly completed in the course of the two following seasons. A second division, extending to Killingly, a distance of 16 miles, was put under contract in the autumn of 1836. The grading of this division was nearly completed in the course of the following year. The fourth division, extending from the state line to Worcester, was put under contract in June, 1837, and the third division, extending from Danielsonville to the north line of Connecticut, in the following winter. The grading of these two divisions, was nearly completed by the end

of 1838. During the same season contracts were made for the timber and iron, the former to be delivered in the winter of 1839, and the latter in the following spring. The sleepers are of white oak, chesnut or cedar. The contract stipulated that they should be faced on two opposite sides to a width of five inches, and that they should be not less than six inches in depth and thickness,—the ends cut square, and the bark removed. The longitudinal sills, placed under the sleepers, are of chesnut, hemlock or pine, and are eight inches by four, and in lengths of 18 feet or upwards. The iron rails are of the T pattern, weighing 56 pounds per yard, and in bars of 18 feet in length.

The laying of the rails was commenced early in the summer of 1839, and was nearly completed before the close of the season. The whole track would have been finished before winter but for a delay arising from the loss of a large cargo of iron, on its passage from England, and the sudden suspension of the works, by a snow storm, two or three weeks sooner than it was anticipated. A mile of rails remained to be laid, as soon as the snow disappeared in the spring of 1840.

In the winter of 1837, in consequence of the pecuniary embarrassments of the times, and the difficulty of raising the necessary funds for the efficient prosecution of the work, application was made to the legislatures of Massachusetts and Connecticut for pecuniary aid. The legislature of Massachusetts, on this application, passed an act authorizing the loan of $400,000 to the corporation, in the form of state bonds, payable in 20 years, with 5 per cent. annual interest payable semi-annually. These bonds were issued to the corporation and sold for their account, the corporation engaging to pay the interest as it shall accrue, and to redeem the bonds when they fall due, and as security for the performance of this engagement, they give a pledge to the state of their whole property in the rail-road. The bonds were to be issued from time to time, as the work advanced, and the proceeds applied to the construction of such part of the road as is situated in the state of Massachusetts. This loan of the credit of the state afforded a timely and essential aid to the corporation. It secured an early completion of an important public work, and is attended with very little hazard of loss or inconvenience to the state. An application to the legislature of Connecticut for similar aid was refused.

The small portion of the road which remained to be completed at the commencement of the present year, was finished in March, and the road was immediately opened for public use. Regular passenger trains were established, leaving Worcester for Norwich daily, except Sundays, at 9½ o'clock A. M., 3¾, and 5 o'clock P. M., each on the arrival of trains from Boston by the Boston and Worcester rail-road; and leaving Norwich for Worcester on the arrival of the

steamboat from New York, commonly about 3 o'clock A. M. and at 6 A. M., and 4¼ P. M. The passage between Boston and Norwich, 104 miles, is made in 4½ hours in the steamboat train, which makes but three stops on the route, and in the two other trains in 6 hours, including 10 stops on the Boston and Worcester, and 11 on the Norwich and Worcester road, to receive and discharge passengers.

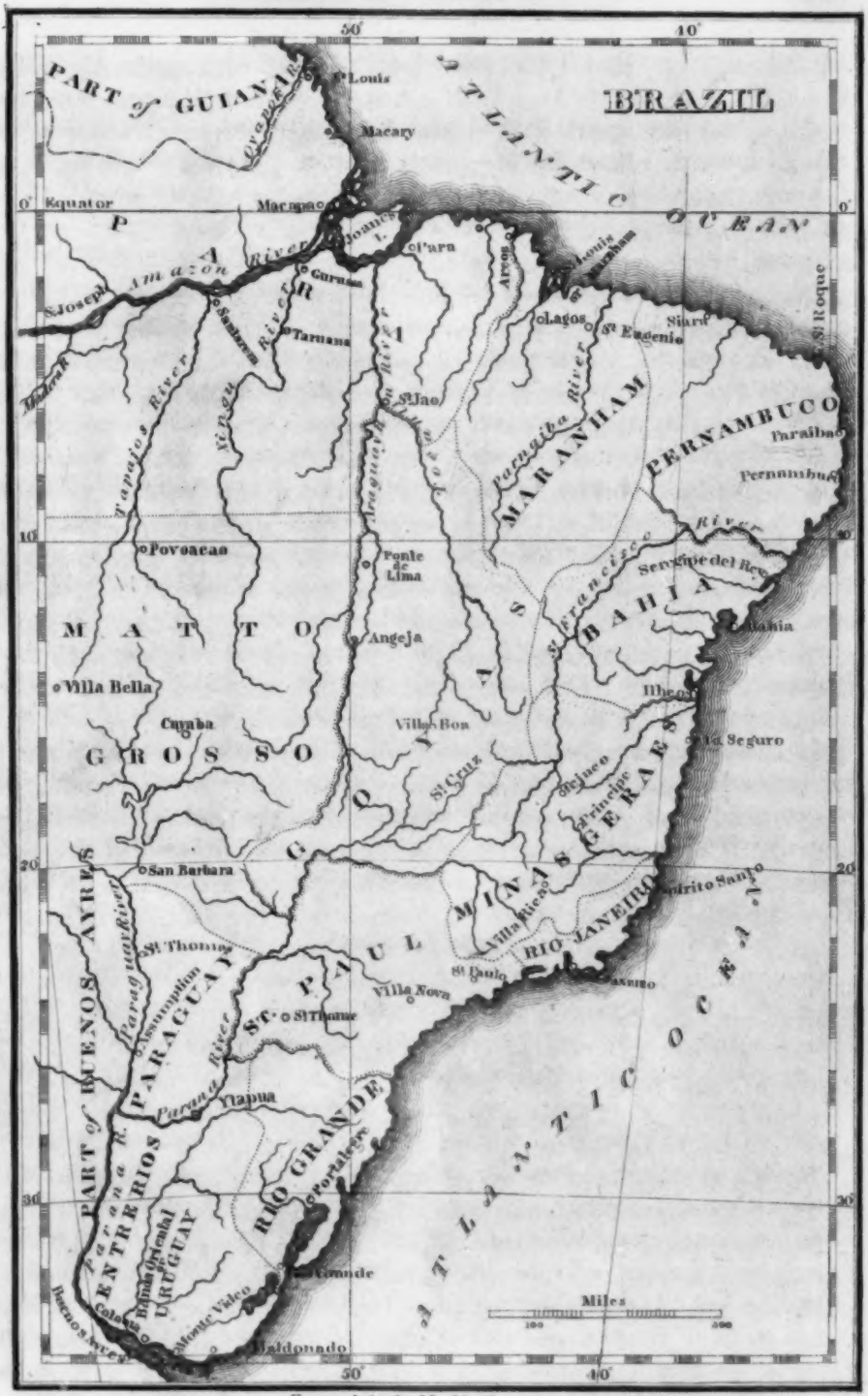
At the junction of the two roads in Worcester, a large building is erected which covers the termination of both roads, affords a place of shelter for the cars, and refreshment rooms for the passengers. On the steamboat train the same cars pass through the line of the two roads, and baggage crates pass through unopened between New York and Boston. At the termination of the rail-road at Norwich, a large building is erected upon the wharf, for the reception of the cars. It also affords shelter to the passengers while removing from the cars to the steamboat, and vice versa, and contains refreshment rooms for the passengers. There are two steamboats which now form this line,—the Charter Oak and the Belle, both safe, commodious, and swift boats. The average passage between New York and Boston, is about 15 hours. The fare from New York to Boston, by steamboat and rail-road, is $5; from Norwich to Boston, by rail-road, is $3; from Norwich to Worcester, $2. The Norwich and Worcester rail-road thus becomes, in connexion with the Boston and Worcester road, not only a most commodious channel of intercourse between Boston and the state of Connecticut, but one of the most direct and expeditious routes of communication between Boston and New York.

(To be continued.)

ARTICLE XVI.

THE EMPIRE OF BRAZIL.

Brazil, although a country which but feebly sustains its rank among civilized nations, occupies a portion of the globe, fitted by nature to be the seat of one of the most powerful empires. It embraces more than half the continent of South America, extending from five deg. north of the equator, to 32 south lat., and through an equal number of degrees of longitude, from 35 to 72 degrees west from Greenwich. It is about 2,500 miles in length, and of an equal extent in its greatest breadth; and it occupies an area of about 3,000,000 square miles. Although the greater part of this vast country is within the limits of the torrid zone, it differs far from the regions within the same parallels of latitude in Africa. The great



Engraved for the Monthly Chronicle

elevation of the interior of the continent, and the abundance of its streams. entirely change its character. Nearly every part of it is susceptible, not only of being inhabited, but of a high degree of cultivation. It is watered by a vast number of rivers, several of which are of majestic dimensions, and one is the largest river on the globe.

The Amazon, or Maranon, which flows through the northern part of Brazil, and enters the Atlantic ocean near the equator, is computed to be 4,500 miles in length, and 175 miles in width. It rises in the Andes range of mountains in Bolivia, its head stream being called the Apurimac. and after sweeping an immense distance towards the north, through Peru and the republic of the Equator, it takes an easterly course, and after receiving the waters of 200 large rivers, it finds an outlet at the place above mentioned. The tide is perceptible in the Amazon about 600 miles from its mouth. It is navigable, as well as many of its branches, a great distance. Among its principal tributaries are the Zapura, the Negro, the Ucayal, the Jutay, the Madera, the Tapajos, and the Xingu. Among other large rivers are the Tocantins, the Araguay, and the Parnaiba, which flow towards the north, the St. Francisco, flowing to the east, and the Paraguay, and Parana, or La Plata, on the western border flowing towards the south. Brazil has many ranges of mountains, which, however, are not of very remarkable height, compared with those of the western part of the continent.

Various parts of the country are rich in minerals, most of which have been little explored. The most precious and beautiful of gems, the diamond, is one of the minerals of Brazil. The annual supply of diamonds, from 1730 to 1814, averaged 36,000 carots. Topazes of great beauty are also found in the diamond districts. Gold is also found, in grains, in the sands of most of the principal rivers. It is obtained by washing the sand. Iron ore is found in great quantities, and also copper ore, but these mines are not wrought to any extent.

In Botany, Brazil is one of the richest countries in the world. The richest plants and flowers here flourish with the greatest vigor, and in the greatest luxuriance. Vegetation, indeed, covers every portion of this immense empire, but in very different degrees. A stupendous range of virgin forests may be said to extend from one extremity of Brazil to the other, running parallel with the coast, and forming a magnificent belt between that and the interior. Here the soil is uncommonly rich, being principally vegetable mould, or a fat red loam. In these virgin forests vegetation attains its greatest luxuriance. They produce all the large timber trees, and the ground, when cleared for cultivation, gives an amazing increase.

Beyond these forests the traveller meets with a totally different country. This is called the Sertam district. The general character of the soil in these regions is more or less sandy, and though

never destitute of verdure, the vegetation can hardly be called luxuriant, particularly when compared to that of the coast, and the majestic virgin forests which border its shores. All travellers speak with great delight of the exceeding beauty of the Brazilian forests. Plants which are raised in other countries at great expense, and reach, after all, but a puny growth, here flourish in all the magnificence of their perfect being. Thick coppices are formed by the numerous species of Cassia, Caesalpina, and Bauhinia, and the gay colors and elegant forms of these contrast curiously with the grotesque character of the Aloe and Cactus. The trunks of the forest trees are covered with beautiful creepers, and parasitic Ferns occupy the branches. Orange trees, bearing fruit and flowers at the same time, are found there in the greatest profusion.

The Rhizophora Mangle, the Mangrove tree, grows upon the whole extent of the sea shore, and is curious from its seeds shooting into the earth while they remain attached to the parent plant. In the forests are seen the immense stems of the silk cotton tree, (bombax,) the thorny brazil wood, the lecythis, with its singular fruit resembling a pitcher. The iatropha manchot, or bread fruit tree, though a native of the more northern provinces of South America, is cultivated with great success in Brazil. In the midst of the great forests are tracts called rossados, which, after burning the felled trees, are planted by the land owners with the bread fruit tree, maize, beans, coffee, &c.

The jacaranda attracts the eye by the lightness of its doubly feathered leaves. The large golden colored flowers of this tree and the Ipê, dazzle by their splendor, contrasted with the dark green foliage. The Brazil nut is one of the most interesting plants of South America, and deserves to be cultivated in the warm parts of America, as the almond and the walnut are grown in Europe. The produce is abundant. Each nut, the shell of which is so hard as almost to defy the sharpest instrument, containing from fifteen to twenty well flavored nuts, which, besides being very agreeable to the taste, furnish an oil, which for burning, is said to be preferable to that extracted from any European nut. Among the valuable products of the forest are the Brazil wood of commerce, and the rose wood, now so extensively employed as an ornamental material for furniture ; also, the balsam copaiva, and the ipecacuanha, the true Brazilian drug. The cacao is probably a native of Brazil, though it is cultivated in other warm countries. From the seeds of the cacao, chocolate is manufactured, which is extensively used, not only in South America, but in Mexico, and in Spain and France. Coffee is one of the products most extensively cultivated, and it forms one of the principal articles of commerce. Coffee trees are planted on the sides of the hills, the tops of which are crowned by the Brazilian pine. There are besides, the

more humble and lower plants, which clothe the ground with rich verdure, and delight the eye with the splendor and gay variety of their flowers. The purple rhexia, profuse clusters of melastoma, myrtle and eugenia, the reedlike dwarf palms, and many others. There are also the glorious climbing plants hanging down from the trees above. The large blossomed bignonia, the climbing tufts of the honey-bearing paullinias, and the far-spreading tendrils of the passion flower, which is known among us only as a green house plant.

The extraordinary luxuriance of animal and vegetable life, which is the chief characteristic of the new world, has been the astonishment of all who have visited its shores. The number and variety of insects toward the coast is inconceivable. To enumerate the countless variety of them would be impossible. The diurnal butterflies are of a size and brilliancy unrivalled by any in the whole world. Of these gaily colored tribes, between six and seven hundred species are said to be found in Brazil alone. One in particular, named after the god of love (*Pap. Cupido* L) has the under wings embossed with gold spots in such a way as to appear as if liquid drops of that metal had fallen upon the wings and cooled without injuring them. Ants are as numerous as in Western Africa, but the scorpions and centipedes are small, rarely seen, and do not seem to alarm the natives.

A great variety of monkeys are found in Brazil, but they are not of so large a size as some of the apes and baboons found in the old world. The howling monkeys live in the deep recesses of the virgin forests, and morning and evening are said to send forth tremendous and frightful howls. The bats are very numerous, and no doubt help greatly to keep within due limits the myriads of flying insects. The ferocious quadrupeds are mostly small, and although of many species, they appear to be few in numbers, and are afraid of man. The largest are the puma and the jaguar—the last is the most formidable animal. There are besides, several small and handsomely marked tiger cats; but the lion, tiger, panther, hyena, and the whole list of savage quadrupeds, so common in Africa and India, are totally unknown in the new world. The puma, (*F. concolor*) may be said to represent the lion in Brazil. Like that, it is large and uniformly yellow, but without a mane or tufted tail. It is about five feet long, and two and a half feet high. It is said to climb trees with the greatest ease, although it generally lives in the forests and remains concealed in the underwood. In its wild state it never attacks man, and when in confinement, becomes very gentle. The jaguar is not unlike the American panther. They inhabit the virgin forests, and attack young cows and cattle, and sometimes horses, but they do not prey upon man unless pressed by hunger. The armadillo is found here, squirrels and numerous other of the lesser quadrupeds. Cattle multiply to an immense extent in all the provinces of Brazil, but

more especially in the south. The great farms contain two, three, four, and sometimes even forty thousand head of cattle. The bulk of these roam at large in a wild state, with no attendance except that of two or three peons, or herdsmen, riding constantly round the wide pastures, to keep them within their bounds, and defend them against the attacks of wild beasts. Once a year they are collected within an enclosure and branded with the mark of the master. Portions of these roaming herds are from time to time caught and killed, chiefly for the hide, though the flesh also is dried in a peculiar manner, and sent to the northern provinces. A certain number are tamed, to supply milk, and to serve for meat, which is considered more delicate than that of the wild cattle.

Brazil is very rich in birds. Not more than one-fifth of the whole empire has yet been explored, yet more than five hundred different birds have been already discovered, and new objects are continually found to enrich the museums of the curious. The rapacious birds are said not to be numerous. The large black vultures are every where seen perfectly tame. Humming birds are to be seen wherever a tree is in full blossom, darting about from flower to flower, among splendid butterflies, often much larger than themselves. The water birds, along some parts of the coast, are abundant. The splendid scarlet curlew and the red flamingo are met in flocks of many hundreds.

Serpents and reptiles appear to be found much less frequently than in some other tropical climates. The rattle snake is unknown or is very rarely seen. Boas of a large size are said to be met with on the banks of the great rivers. The frogs in some situations are said to grow immensely large, and to make an almost deafening noise with their croaking.

From this description of the climate, soil and productions of Brazil, it will be seen that all which is wanting to render it the garden of the world, is an intelligent and industrious population. Yet so inefficient are its inhabitants, that the cities rely chiefly for their supplies of flour, and nearly all manufactured goods, upon foreign countries. Its principal products for exportation, are hides, cotton, coffee, sugar, cacao, wool, drugs and various kinds of wood. It affords a valuable trade to this country and Great Britain. In the year 1838, 142 vessels cleared from the United States for the ports of Brazil. The imports from that country to the United States, amounted to $3,200,000, consisting of the articles above enumerated, chiefly of coffee, sugar, and hides. The exports thither consisted, of flour, 125,000 barrels; cotton piece goods, of value of $530,000; spermaceti candles, soap, furniture, boards and plank, gun powder, pork, bread, and printing types and presses. In 1837, the imports from Brazil amounted to $5,000,000, of which $3,250,000 consisted of coffee,

and hides $950,000. The exports amounted to $1,750,000, including 60,000 barrels of flour, and cotton piece goods of the value of $300,000. In 1836, the imports were still larger, amounting to $7,210,000, of which $4,623,000 consisted of coffee, $680,000 of hides, and $1,600,000 of sugar. The exports amounted to $3,100,000, including 120,000 barrels of flour, and cotton piece goods of the value of $200,000.

Although it would appear from this statement, that there has been a falling off in the trade of Brazil, within the three years of which the results are given above, this must be attributed rather to the general diminution of the American trade, and the reduced valuation of merchandise, than to a diminution of the produce of Brazil. This is evidently increasing, and it is gratifying to perceive that there is a rapidly increasing demand in Brazil for American manufactured goods. If we look back to the year 1821, we find that the whole value of imports into the United States from Brazil, was but $605,000, and the exports thither $885,000. From this and other evidence, it is apparent that the productiveness of that country is rapidly increasing, though not in a ratio which might be expected from the richness of its natural resources.

The population of Brazil consists, unfortunately, of a mixture of white, African, and Indian blood. It numbers at present about five millions, and is rapidly increasing. Not more than a fifth part are white, and of European birth or descent; three-fifths are slaves from Africa, or of African descent; and the other fifth are free negroes, Indians, or a mixture of the two last races. The most intelligent and enterprising portion of the population are natives of Portugal, who have emigrated hither for the purposes of trade, and for carrying on plantations by employing slave labor. There has been a regular importation of slaves equal to an average of 50,000 per annum for the last forty years. This accounts for the great number of this class of the population. Of the imported slaves a large proportion are males. The creoles are ignorant, idle, and profligate. The state of education is extremely low, and the country is almost destitute of the means of instruction. The free blacks and mixed population are extremely ignorant and vicious. On comparing the commerce of the country, and the nature and amount of its produce for exportation, with the number of the slaves, it will be apparent that there is no productive labor but that of the slave population, and that the increased productiveness of the country in late years, is owing only to the increased number of slaves.

From this statement of the character of the population it will be perceived that there is no room to hope for any rapid improvement of the condition of the country. Its political institutions are not of a character to inspire any greater hopes. All that is to be hoped on

this score is, that the state of affairs may not grow worse by the country relapsing into a state of anarchy. The government is in form monarchical. The sovereign, however, the Emperor Pedro II. is in his minority, having been born, Oct. 2, 1825, and the government is administered by a regency which is elective. There could be faint hopes of improvement of the condition of this country, at present, from a strictly popular government. An intelligent and energetic sovereign could do much to reform the present gross abuses, to introduce the means of education, and to encourage industry. But energy without discretion could not effect this. The late emperor Pedro I., who, on the separation of this country from Portugal, in 1825, was acknowledged the hereditary sovereign, with the title of emperor, infused some degree of vigor into his administration, and the country appeared to be prospering under his reign. But the people became impatient of so rigid a rule, and the emperor met with constant opposition in his schemes of improvement and reform. At length he became so disgusted and embarrassed by the opposition both of the legislative chambers and of the people, that on the 6th of April, 1831, he issued a proclamation abdicating the crown in favor of his son, then in the 6th year of his age, and on the following day embarked, with his family, on board an English frigate, for Europe, leaving the infant emperor behind, under the guardianship of one of his friends. On his departure the chamber of deputies assembled, and made choice of Francisco de Lima, the Marquis of Caravellas, and Vergueiro to constitute a Regency. By them and their successors the government has been administered ever since.

The government, under the regency, seems to have been chiefly characterised by its imbecility. Its great effort, and in that it has been successful, has been to protect the government against revolution. Several serious attempts to overthrow the government have been made in different parts of the empire. One of these was made as early as 1832, at Pernambuco, Villa Nova, and Santarem, under the pretence of restoring the crown to the late emperor, who had the year before abdicated it. This revolt was easily subdued, by the interference of the military, who remained faithful to the regency. The same year a project was introduced into the legislative assembly, and much discussed, for an important alteration of the constitution, but it was finally rejected by the assembly.

In 1833, on the 22d of March, a serious insurrection broke out at Oro Preto, or Villa Rica, the capital of the province of Minas Geraes. The insurgents held possession of the capital for two or three months, but were finally reduced to subjection. The same year a revolt was made by 80 convicts in the fort at Bahia. They surprised the garrison, hoisted a white and blue flag, and turned the cannon of the fort upon the town. They held possession of the fort

for three days, at the expiration of which time they were compelled to submit.

In 1835 there was an election of a regent, in which Senhor Feigo was chosen by a majority of 890 votes over his competitor, Calvacanti. In January of this year, a conspiracy was discovered at Bahia, for a general insurrection of the negro slaves. The discovery was made on the evening preceding the night fixed for carrying it into execution. An attack was made by the negroes, but the soldiers being in a state of full preparation, the former were easily repulsed, many of them were killed and wounded, and a large number made their escape into the country. In August of the same year an insurrection was excited among the Indians at Para. After some skirmishing between them and the soldiers, they got possession of the town, thoroughly pillaged it, and held possession of it for some months. The foreigners, who were chiefly English, took refuge on board a British sloop of war, and other shipping, and were carried to Maranham. English property, estimated to amount to £300,000, was destroyed or lost. An expedition was sent against the insurgents from Rio Janeiro, which proved insufficient to reduce them to subjection, and the port was declared in a state of blockade. In May of the following year the Indians abandoned the city, and the imperial troops entered it. The custom houses were found empty, and nearly all the private houses had been abandoned. The town had been set on fire in several places.

In the early part of 1836, a dangerous sedition broke out at Portallegre, in the province of Rio Grande, which spread rapidly and soon invaded the whole province. This is the extreme southern province of the empire, and borders on Monte Video, and the Banda Oriental. The insurgents first obtained possession of the town, but the imperial troops, by a counter revolution, regained possession of it, and drove the insurgents to the open fields. The latter reinforced themselves and returned to the attack. They held possession of the fort, but they were repulsed with considerable loss, in their attempts upon the town, the imperialists, who held possession of the latter, having the advantage of a superior artillery. This province has continued in a state of revolt to the present time, the town, Portallegre, remaining in possession of the imperialists. Several reinforcements of troops have been sent from time to time from Rio Janeiro, but they have proved insufficient to reduce the insurgents to submission, and have been defeated in several actions.

In September, 1837, Senhor Feigo, the regent, resigned. He assigned as the reason for his resignation, his inability to remove the public grievances, which were aggravated by the want of appropriate laws, the meaning of which is, we suppose, that the legislative assembly refused the necessary aid for the proper and efficient admin-

istration of the government. The regency devolved, provisionally, on Senhor Pedro Araujo e Lima, and a new ministry was appointed. In November of the same year, a serious insurrection broke out at Bahia. The people declared the province independent of the empire of Brazil, and the president and military governor took refuge on board a Brazillian corvette. The revolutionists took possession of the lower town without bloodshed. In the following month they attempted to gain possession of the upper part of the city and suburbs, and were defeated with great loss. They were driven back within the fortifications of the lower town, closely invested by the imperial troops, and all communication with them, by sea and land, was cut off. They held out until March, when the imperial troops under Gen. Collado, took the fortification by storm, and put an end to the revolt.

In 1838 there was a new election of regent, and the acting regent, Pedro Araujo e Lima, was chosen by 3,300 votes over his competitor, Caualcante, who had 1,700. Bento Gonsalvez, the leader of the Rio Grande insurrection, who had been taken prisoner, and held in confinement as a state prisoner, at Bahia, regained his liberty at the time of the insurrection in that place, and reappeared at Rio Grande. His appearance at first inspired new confidence among the insurgents, but according to the latest accounts from that country, the government troops appeared to be gaining the ascendency, and there was a prospect that the insurrection would be soon subdued. There appears to be no population in Brazil capable of sustaining a popular government, and with a little more vigor in the central government, it would seem to have the power of keeping the provinces in a state of subordination.

The population of Brazil is distributed between ten or twelve principal, and several minor provinces. Most of the more intelligent and enterprising portion of the inhabitants reside in the cities, which constitute the capitals of the several provinces, and which are remote from one another. The capital city of the empire is Rio Janeiro, the same name being given also to the most populous and wealthy of the provinces. The city is situated upon the western side of a noble bay and harbor. It is distinguished for its beauty of situation, and is well built in the style of a European city. It is the largest city of South America, containing about 150,000 inhabitants. It is the seat of the government of Brazil, the residence of the court, and its chief place of commerce. In the neighborhood of the city are a number of residences remarkable for their beauty. The city next in rank to Rio Janeiro, and somewhat resembling it, is Bahia, the capital of the province of the same name. The relative position of these cities and provinces, will be best understood by reference to the map. This also is an important commercial market, and its population is

estimated at 120,000. The city next in rank, and the capital also of a province of the same name, is Pernambuco. It has an enterprising population, who have been distinguished for their liberal, and even republican principles. Their number is estimated at 60,000. It is a place of extensive trade, and is distinguished for the export of cotton of an excellent quality. The next town in size is Maranham, the capital of the province of the same name. It has a population of 30,000, and is a place of considerable trade in cotton, rice, and hides. The city and province of Para are situated on the Amazon. This province is remarkable for the fertility of its soil, and is well adapted to the culture of cotton and sugar. It has an increasing population, which previous to the late disturbances, was estimated to be nearly 20,000. At the south of the capital, are the city and province of San Paulo. The city and its immediate environs contain a population of 18,000. At the southern extremity of the empire is Rio Grande de Sul, the chief towns of which are, Portalegre, with 12,000 inhabitants, and Rio Grande or San Pedro, with 10,000. In the interior, and in the rear of Rio Janeiro, is the province of Minas Geraes, the seat of the formerly celebrated gold mines. The capital of this province is called Ouro Preto, formerly Villa Rica, in the immediate vicinity of the mines. The decline of its population from 30,000 to 9,000, may be considered as an indication of the diminished produce of the mines. Goyas is a province situated still farther in the interior. It has a considerable population, who are engaged in agriculture, and in the washing for gold. It contains a number of towns, of which Villa Boo, Santa Cruz, and Meia Ponte, of 6 to 8,000 inhabitants each, are among the principal. The most entirely inland province is Matto Grasso. It is a province of vast extent, thinly peopled, and very little cultivated. Its principal inhabitants are Indians in their native state. Its capital, which bears the name of the province, has a population of 6,000 inhabitants. It is a place where gold, to a considerable extent, is collected. Cuyaba, with 10,000 inhabitants, is the most central town of South America. Diamentino is a small town, and a place for trade in diamonds, which are collected in the vicinity. A large portion of the vast regions over which these provinces extend have been but imperfectly explored, and they afford a rich and most inviting field for the labors of the naturalist.

MISCELLANY.

THE WINGS OF ICARUS,

Or, the Provincial in Paris.

[Continued from page 235.]

CHAP. VI.

"Arrogant as a *parvenu*, declamatory as an academician, boorish as a jockey!" said Deslandes to himself, on leaving M. Piard's house, "and I, who have had the degradation of admiring the daubs which he calls paintings by the old masters, by Michael Angelo, I do not deserve ever to touch pencil again. To be sure, his reasoning is not entirely without justice, and on general principles the advice he has given me may be good. But how is it applicable to me! I should think I was old enough to take care of myself. I wanted support, and not a sermon. He is amusing, with his quotations from Horace; I would make any bet that he cannot translate Viri Romae. Poh! why should I trouble myself about him. If I have not the good fortune to please him, his wife, perhaps, may not be so difficult. That woman is indeed remarkable. With her noble bearing, her piercing look, and quick repartee, it is not strange that she has such a reputation. Although I was with her hardly an hour, I feel myself almost smitten. "*We must always hope for what we want, and labor for what we hope for;*" the advice is good and I will follow it. To-morrow when I send her the two hundred francs, I will begin a correspondence with her. I will write her a note, which shall show her that although I came from the country, I am neither boor nor fool. Since the illustrious M. Piard finds me unworthy of his good graces, it becomes necessary that I should address myself to his wife. So much the worse for him!"

Half consoled for his repulse by the hope of repairing it, Deslandes went to the Palais Royal, and entered Vefour's restaurant, as provincials usually do, having a certain pride in dining as near Very's as possible. The hour for the play coming on, he went to the Opera, where *William Tell* dissipated, as by enchantment, the last cloud on his spirits. Electrified by the music, of the charms of which he had been deprived so long, charmed by a coup d'veil of the theatre, where was a multitude of women, richly adorned, most of them by wealth, but some naturally, whose appearance seemed at once to recompense him for the abstinence which he had suffered, the substitute felt his blood run with more warmth and energy through his veins. The beautiful notes of Duprez thrilled in his breast as the sound of the trumpet, calling the soldier to battle. With those who have musical tastes, the reaction of the impression on the thought is immediate and powerful. At the end of the air of the third act, Deslandes, whose exaltation followed the gradual ascent of the singer's voice, felt for a moment as if

he bore the world on his shoulders. The schemes he had hardly owned a few hours before, rose suddenly with a sort of explosion, and if we may use the expression, his ambition which had hitherto only sung second, placed itself in unison with Arnold, and mounted to the highest note.

"Yes, the will is every thing," said he, going out from the pit where he had economically been seated. "*Suivez moi, suivez moi!* I feel within me an energy capable of overthrowing all obstacles!—*Arrachons Guillaume*—What a magnificent voice that Duprez has. That alone would be worth the journey—and I shall come to the council of state, and the fool Piard will kill himself for spite. '*Amis, amis, secondez ma vaillance.*'"

Thus ruminating, while he hummed the airs to which he had been listening, he entered the green-room, where he soon met Blondel. He had had an opportunity of admiring that gentleman, with his yellow gloves, his eye-glass, the ring *à pomme d' or*, his vest of garnet velvet, his circumflex moustaches, and frizzed toupet, upon the second seat of one of the procenium boxes. Blondel had made the best use of his time since breakfast. To pay off his most urgent debts, to cover up the ruinous state of a part of his establishment, to send off Mad. Tavernier, the resort of his evil days, and to supply her place by a hired servant, and to provide himself with a cabriolet, all these matters he despatched in a few hours. Thus rid of his misery, he proceeded without delay to restore his glory. His friends, who for some days past had supposed him lodged in the Rue de Clichy, or at the bottom of the nets of St. Cloud, and who had not troubled themselves much about the matter, now saw him appear triumphantly at the Cafè de Paris, and at the Opera. It was certain, that the star of Blondel de Gustan, temporarily eclipsed, had not yet fallen to that black abyss to which daily descend so many ephemeral stars.

The substitute's friend regained thus his rank in the cohort of well-dressed men. Proudly encamped amid a group of Arstabans of his own species, he was holding forth in a loud and distinct voice, when Deslandes came to slap him on the shoulder. Under any other circumstances M. de Gustan would have taken this familiarity very ill, and would not have shown much eagerness to join a man, who to the ridicule of an unfashionable dress, added the not less serious crime of having reached the green-room by the stair-case leading from the pit, but the twenty thousand francs in the pocket book had carried his friendship even to tenderness. He took, with great haste, the arm of the substitute, and descended the stairs with him, at the risk of being rallied by his elegant friends for allowing himself to be seen in such low company.

"What an Opera William Tell is, and what a singer Duprez is," said Deslandes, whose enthusiasm had not yet cooled.

"Duprez is tiresome, and William Tell is a little old," said Blondel, who according to a pretty common custom, thought he shewed a superiority in admiring nothing.

The two friends entered the cabriolet which had taken the stand in the file of carriages in front of the Opera House.

"You have not told me where you are going to take me," said the substitute. "If it happen to be to see your duchess San Sevorino, I should prefer to put off my presentation till I have paid a visit to your tailor."

The Duchess San Sevorino was one of those imaginary beings often created by the imagination of fortune hunters—a sort of fire works to dazzle and be extinguished. Blondel had created her to exalt himself in the eyes of his country friend, and make him more accommodating on the subject of the loan he was trying to bring about. Useful until now, the Duchess at this moment became inconvenient; he who brought her into the world thought he had a right to take her out of it, as soon as he found her in his way.

"You strike a dagger to my heart," said he, sighing,—"my poor Cornelia—"

"Is she ill?" asked the substitute.

"Dead!" said Blondel, with a melancholy voice.

"Dead, so suddenly?" cried Deslandes, with astonishment mingled with compassion.

"A brain fever,—died in three days—and I could not receive her last sigh. Never mention again to me, my dear friend, this name; the sound of it makes me ill. This is life, my poor friend! If I had yielded to my first grief, I should have blown my brains out, but one must be a man, and learn to suffer. I seek to divert myself, and throw myself headlong into the whirlpool. Come, let us shake off these mournful ideas. They will come soon enough to besiege my pillow. We are going to see a very amiable woman, Mad. de Marmancourt, the widow of a captain in the naval service. Between ourselves, I do not think she carries virtue to inhumanity. If I were married I would not carry Mad. de Gustan there, but we young men are above these little scruples. The first thing necessary for a woman is to be young, pretty, amiable,—do you not think so?"

"Certainly," replied Deslandes,—"I have not come to Paris to go to school. It is so long since I have seen anything except prudes, devotees and frights, that I shall be delighted to talk with a woman who, if I understand you, is neither of these."

"She is entirely the contrary, but you shall see her. You will meet at her house some men of the world who may be of use to you."

Blondel stopped his cabriolet before a very pretty house in the Rue Saint Lazarus.

"Here we are," said he, descending from the cabriolet.

Deslandes followed his example, and both, after they had cleared the carriage steps, ascended the stair case which led to the apartment of the lady whose graces and humanity had just been lauded by the Parisian.

Mad. de Marmancourt, we own it with regret, belonged to that ambiguous class for whom formerly the allegory of the syrens was invented,—a profane and numerous sisterhood who congregate in preference

in the quarter of Paris included between the Rue Provence and Nouvelle-Athens. Though she had never been married, she was a widow according to the custom of ladies of her profession, who invariably wear mourning for a colonel or a captain of the marine service. Mad. de Marmancourt had decided for the navy, because she thought the army less distinguished on account of the prodigious number of colonels who had been laid in the tomb by the Artemisias of the Chaussie d' Antin. By another refinement she had disdained to sanctify her name, this kind of canonization having become altogether vulgar, and, as she said, worn out. You should have seen her smile as she spoke of Mad. St. Leon, or Mad. St. Amaranth.

Madam Theodosia de Marmancourt was twenty nine-years old, and called herself twenty-one, but she thought herself still in an error, and had decided to become a minor the next year. She was of a middling height and very thin, that is to say, very well made by means of a little art. She had regular features, a modest look, a candid smile, a small voice, and a girlish expression; with very little intellect, very ignorant, she still carried on her affairs with an address, a skill, a perfection which the most consummate diplomatist might have envied. Her life was so ordered, the occupation of each day regulated by her with so much calculation, that she carried on innumerable intrigues, without suffering the threads of them to become tangled.

The friends of Mad. Marmancourt were divided into three classes. The honorary, the titular and the supernumeraries. Moreover, each class had its chief and its doubles. She received them together in her saloon, and assembled them at dinner once a month. The past, the present and the future went on in this way with the best understanding. Either from a natural blindness, or the usages of society, or philosophical toleration, all these men, young or old, but always rich, submitted to the rules of the house where feminine absolutism reigned. If her male friends were numerous, her female friends were few. To aspire to the title of the latter, one must be either old or ugly. This principle, acted on by many women, was rigorously practised by Theodosia, who was too prudent to receive at her house a rival possessing youth and beauty. Among the visiters of this mansion one alone was without fortune. This was Blondel. He filled there himself the place of a man loved for himself alone.

After having crossed an antechamber and a dining room, dimly lighted, the two friends were introduced into a saloon furnished with chamois stuff, of a color favorable to the complexion. Eight or ten men, for the most part wearing orders, were assembled there. Some were playing Bouillotte, (a sort of game played by five, where one gives up his place as soon as he loses) others grouped before the fire place were talking with the mistress of the house, near whom were seated two ladies, who had the most legitimate right to her friendship. One of them was forty-three years old, and had been learning for some time to play on the piano, in order to reinforce her powers of pleasing, the other much younger, but positively ugly, and red as a peony, break-

fasted upon vinegar every day that she might grow pale, bright colors having gone out of fashion.

Mad. de Marmancourt, scarcely noticed the substitute when Blondel presented him, and taking the latter aside with a haste in which a mysterious uneasiness was betrayed,—"Since the morning," said she, "I have been hardly alive. It was barbarous to write me such a letter! To threaten to kill yourself if I did not find the money! But you know what has become of all that I had? My jewels and my silver are in pledge, and I could not give up my dinner set. I have already been complimented on the simplicity of my head dress, which means that it is apparent I do not wear my diamonds. I swear to you, that I have nothing more, absolutely nothing,—if it had not been so would I have left you in trouble? You shoot yourself! What folly. I have made up with M. Julius."

"Hah, hah," said Blondel, "the hen with golden eggs has come back,—this changes things. The great provincial who came in with me has lent me wherewithal to live for some days—but after that—"

"After that, I will take care," answered Theodosia with vivacity. "Is he rich? the great black face,—he has a very simple air with his green gloves. To be sure he has a handsome diamond in his shirt. Is he rich?" repeated she with a tone in which another would have said, "has he any sense?"

"If I had his pocket book," replied Blondel, "I know a lady to whom I should offer to-morrow a *caleche* and four horses."

Theodosia asked nothing more, and drew near the fire place where the substitute was standing, looking somewhat embarrassed in this strange society where no one spoke a word to him. She graciously began with him one of those conversations where common places bear all the burden.

"You are a musician, madame?" asked Deslandes, who thought, on seeing a grand piano standing between the windows, that he was entering a ground favorable to his personal pretensions.

"I have been," said Theodosia, mincingly, "I adore music, but it affects my nerves in such a manner that I have been obliged to give it up, to my great chagrin. I assure you, it is such an enchanting, ravishing art, it is really unfortunate to be endowed with such an excitable organization."

"How, then—madame, I shall then be deprived of the pleasure of hearing you," answered the substitute.

"I could not play ten seconds before feeling myself oppressed, stifled, and suffering from a nervous attack."

"What assurance she has," said the pianoforte player, to her neighbor of forty-three. "She never touched her fingers to the instrument, and I am sure she does not know a crotchet from a minim."

"She is not afraid of going too far, when she wants to be sentimental," said the vinegar drinker, "but she ought not to wear rouge, it gives her a common air."

The chapter on music being exhausted, Deslandes, to keep up the conversation, tried that of dancing. Mad. de Marmancourt regretted

loudly the opera balls, to which Lent had put a stop, and her two friends joined their regrets to hers.

"But, ladies, we are going to have a superb ball," observed Deslandes, "a ball for the benefit of the Polish refugees,—do you intend to go?"

"One must have tickets," responded the three women at the same time.

"I can furnish you with some, for I have a number to dispose of," answered the substitute, desirous to show that he was not a stranger to the fashionable world, and he drew from his pocket the tickets, for which he was still in debt to the wife of the counsellor of state.

The two friends of Mad. Marmancourt held out their hands without hesitation; still more prompt and with a gesture full of ease, Theodosia took the whole packet.

"Here are tickets for ladies and gentlemen both," said she with a gracious smile. These gentlemen will share them with us, and we will leave to them the pleasure of offering us the red ones—there are precisely three of that color."

In looking at the tickets, she perceived the signature that Mad. Piard had affixed to them as lady patroness. At sight of this she made a sudden gesture of surprise, and then smiled with an air of raillery, the two other ladies did the same, and whispered together,—the men called upon each to take a ticket, shared this hilarity, which was unintelligible to Deslandes, who heard several times the name of M. Julius whispered about.

"Who is this M. Julius?" said Deslandes to his friend Gustan.

"A friend of the family," replied Blondel, pinching his lips.

The distribution being finished. Deslandes saw several of the men return to Mad. Marmancourt the price of the tickets they had received.

Good, said the substitute to himself, here are my two hundred francs repaid, and he was not discontented at the arrangement, but his satisfaction was of short duration. Theodosia did not seem to remember that there remained any account for her to settle; instead of coming to him as he expected, she carefully drew near Blondel, and with a skilful motion slipped the pieces of gold she had just received into his hand. Notwithstanding his assurance Blondel reddened and cast down his eyes, and then by a sudden impulse, he sat down at the Bouillotte table from which one of the players had just arisen.

This money must bring me luck, said he to himself, while he placed before him, for a pool, the two hundred francs on which his friend was still depending.

This woman is very thoughtless, said the latter to himself, after a half hour's vain expectation, it is impossible for me to go and remind her that she has not paid me my money. If at least she had left me one ticket, but on my faith she has taken the whole ten, and now, if I wish to go to this ball, I must apply again to Mad. Piard. This will make two hundred and twenty francs for my entrance. Deuce take it, it is pretty dear. It cost me but three francs, twelve sous, to hear Duprez.

The substitute was to be put to another trial which he had not expected. Like the wife of the counsellor of state, Mad. Marmancourt had her touch-stone by which to discover the degree of estimation which the gentlemen deserved who were for the first time presented to her in her saloon. Tea was brought in. With a sweet smile she offered some to the young magistrate, and while he raised himself after having received from her a cup filled to the brim, she, unperceivedly, pushed his elbow; a few drops fell upon the dress of the experienced lady, who threw herself back, crying out in a most dolorous tone:

"Alas, alas, my dress is ruined!" "Tea does not stain, madam," Deslandes hastened to remark, while from the shock the affair gave him, he spilt on the carpet some more of the liquid contained in the cup.

"I tell you sir, my dress is ruined, destroyed," replied Theodosia, rubbing it with her handkerchief in such a way as to spread about the mischief, "a dress I have on for the second time only."

"My dear, this is too bad," whispered the eldest of the three friends to her neighbor, "it is more than a year I have known this dress, and it is no less than the third time that it has performed a part in this same comedy. It has already bought her velvet mantalet and her set of turquoises."

"These men are so stupid!" replied the other friend, shrugging her shoulders in pity, while she seized at once three cocoa nut cakes.

Among those who witnessed this scene, were several who had in past times been subjected to a similar trial, and who smiled maliciously as they looked at the substitute who was exhausting himself in reasonings drawn from his chemical lore, to prove to Mad. Marmancourt that a few drops of tea could not make a stain upon a silk dress.

"Sir, I must take the liberty to contradict you," said a little thin man, sixty years old, and decorated with several foreign orders, and in a tone of affected gravity, (this gentleman was known in that saloon under the name of Mr. Ernest) "green tea is to be sure harmless, but the black tea, that of Siam among others, is dried on copper plates, and contracts an incontestible caustic. This last is always used by madame and it stains badly; I have had some experience in the matter."

Why need this old Siamese meddle in the affair, thought Deslandes.

"Come, madam," continued the old man addressing himself to Theodosia, "forget this little misfortune. Your dress is ruined, every body will agree to that, but there are dresses enough in the Paris warehouses as you know, and the gentleman too cannot be ignorant of the fact."

Mad. Marmancourt took the patriarch Ernest aside, for fear he should carry his raillery too far, while she scolded him in a low tone, lavishing on him at the same time those little threatening pleasantries which are not disagreeable to antiquated beaux. The substitute, a little confused at the accident which had happened, sought refuge at one of the card tables. He saw that each player had for a pool, a pile of gold, and that there was some difference between the Paris game of Bouillotte, and the provincial game at five sous the fish, to which he had been accustomed. Too vain to draw back, he took a seat, but remained but a short time, for at the third hand his pool was emptied and he

rose with a purse lightened of fifteen louis. At this moment a man of mature age entered the saloon, where he was received by a general exclamation.

"Ah, here is Julius! good evening, Julius! why are you so late, Julius?"

Deslandes turned, curious to see this M. Julius whom every body seemed to know and about whom they had been talking with a sort of mysterious air. He was motionless when he found himself facing M. Piard, who seemed to have left all the solemnity of his office at the bottom of his violet-colored morocco portfolio. The counsellor advanced toward the mistress of the house, with a smile on his lips, and drew from a twisted paper horn a superb boquet which he presented to her, performing this act of homage with the ease of a professional beau. He afterwards shook hands with the men whom he knew, chatted about the news of the evening, helped himself familiarly to a cup of tea, and, while he was sipping it, drew near the fire, before which he presented in turn the soles of his varnished shoes.

After the incivility with which he treated me, thought the substitute, it will be mean for me to address him.

Self love spoke, ambition did not let it wait for an answer.

I cannot, however, reflected Deslandes, pretend not to know a man whom I saw this morning, and at whose house, my relations with M. de Loiselay will compel me to visit.

Convinced of the inconvenience of an inflexible susceptibility, the young magistrate approached M Piard. At sight of him the counsellor hastily placed on the mantel piece the cup which he held in his hand. The careless gaiety of his physiognomy was suddenly replaced by an expresion of disagreeable surprise, he made a motion to turn his back upon the importunate solicitor, but a sudden, and doubtless powerful reflection stopped him. By one of those nervous efforts to which fashionable people must frequently resort, he dissimulated the strong vexation he felt, under a smile in which his lips alone took part.

"A thousand pardons," said he, returning the salute of Deslandes, "I am very near sighted, and I did not recognize you. I had not hoped to see you again so soon, but I am charmed at the meeting. Do you know that you were very careless? you forgot to leave us your address. We expect a few persons to dine with us on Tuesday, and Mad. Piard desires to have you join us. It is very fortunate that I happened to meet you, otherwise we might not have been able to convey an invitation to you."

How civil he has become, thought the substitute; what has brought about such a change?

"You must not mind my having quitted you rather suddenly this morning," resumed M. Piard, with an expression becoming more and more affable. "I had some important business to finish, and then, shall I own it, I had not read the letter of my father-in-law. I supposed it was only one of those formal recommendations which call for nothing, and I acted accordingly. Now that I know better, I can tell what remains for me to do. The observations I addressed to you, were to be sure very just, but there is no rule without an exception. If you will

come to see me to-morrow morning in my study, we will talk over your affairs, and perhaps we may discover some means to bring you well into port."

More and more surprised at such an unhoped-for courtesy, Deslandes was confounded in his attempts to thank him. When he left the counsellor, after having agreed to the appointment for the next day, he racked his brain for some time to find the answer to this enigma. Some light on the subject having glanced into his mind, he joined Blondel, who had just been making a harvest at Bouillotte, out of his friend's money.

"Tell me frankly," said he to him, "M. Piard, or Julius, as he is called here, appears to be much at his ease in this saloon. Has he any particular claims to the friendship of madame Marmancourt?"

"Scandal says yes," replied Blondel, with an air which announced resignation, or rather the most complete indifference.

"And what do you think of it?" said the substitute.

"Faith, I agree with scandal,—but why do you care about the matter?"

"Oh, nothing, I only want to get the run of things, that is all. But it is half past two—I have not slept any for two nights, and my eyes will shut in spite of myself. Shall we go home?"

"Home let us go," said Blondel. The two friends left the saloon, and found in the street the cabriolet of the Parisian, who insisted on conducting Deslandes to his lodgings.

Here is one day well filled up, said the substitute to himself, as he went over, before he fell asleep, the events of the day. In introducing me to this singular house, Blondel has benefited me beyond my utmost wish. This morning I was in danger of being lost in a labyrinth, but now I have found a thread which will lead me through it and which I shall take care not to lose. It is clear as day, that with his fifty years, his grey hairs and his spectacles, M. Piard is a little Don Juan, who pays but slight respect to his conjugal vow. He is afraid that I shall betray to his wife his secret, which I have just discovered, and this is the reason he shows himself now so well disposed to me. I am, to be sure, incapable of denouncing him in a spirit of revenge, or as a means of success, but why should I reject another instrument, which, in itself, has nothing reprehensible. Ah, M. Piard is afraid of me. This is not amiss—I shall keep the matter up—he need not think to pay me with compliments and fine speeches. He must help me along—he must put my foot in the stirrup; once on horseback, I shall know how to keep on without the assistance of any one.

With these reflections, the ambitious substitute fell asleep, and dreamed that he was decorated with the badge of keeper of the seals, and that he was singing, with Mad. Piard, a duet in William Tell.

ANTARCTIC DISCOVERIES.*

Letter of Capt. Wilkes, Commander of the American Exploring Squadron, to the Secretary of the Navy:

UNITED STATES SHIP VINCENNES,
March 10, 1840.

Sir: I have the honor to report, that having completed our outfits and observations at Sydney, N. S. W. the exploring squadron under my command, composed of this ship, the Peacock, Porpoise and Flying Fish, sailed in company on the 24th of December, with my instructions to proceed south as far as practicable, and cruise within the Antarctic ocean. Copies of the instructions were forwarded to you with my despatch, No. 57.

We continued in company until the first of January, when we parted company with the Flying Fish, and with the Peacock in a fog on the third.

I then steered, with the Porpoise in company, for our first redezvous, Macquarrie's Island, and from thence to Emerald Island, our second rendezvous, having passed over the supposed locality of the latter in long. 162 deg. 30 minutes east, latitude 57 deg. 15 minutes south, without seeing land or meeting with the Peacock or Flying Fish.

On the 10th of January, being in lat. 61 deg. south, we fell in with the first icelands, and continued steering to the southward among many icebergs, which compelled us to change our course frequently in avoiding them.

On the 12th we ran into the bay of field ice in long. 164 deg. 53 minutes east, and latitude 64 deg. 11 minutes south, presenting a perfect barrier to our progress farther south; a heavy fog ensuing, during which we parted company with the Porpoise, her commander having directions to follow my written instructions in that event.

I had determined to leave each vessel to act independently, believing it would tend to give, if possible, a greater degree of emulation to us all; and being well satisfied that owing to the ice and thick weather, it would be impossible to continue long in company, I deemed it preferable to hazard the event of accident, rather than embarrass our operations.

I therefore submit the details of the proceedings of this ship, as they will, without doubt, nearly coincide with the movements of the other vessels of the squadron, the reports from which will tend to verify our operations.

After an unsuccessful attempt to penetrate through the ice on the 12th of January, we proceeded to the eastward, working along with head winds and fogs, and on the 16th we fell in with the Peacock in long. 157 deg. 43 minutes east, lat. 65 deg. 26 minutes south.

On the morning of the 19th of January, we saw land to the south and east, with many indications of being in its vicinity, such as penguin,

* See Map at page 216.

seal, and the discoloration of the water, but the impenetrable barrier of ice prevented our nearer approach to it, and the same day we again saw the Peacock to the south and west. We were in long. 104 deg. 27 minutes east, and lat. 66 deg. 20 minutes south.

On the 22d we fell in with large clusters and bodies of ice, and innumerable ice islands, and until the 25th were in a large bay formed by ice, examining the different points in hopes of effecting an entrance to the south, but were disappointed. We here reached the latitude 67 deg. 4 minutes in long. 147 deg. 30 minutes east, being the farthest south we penetrated. Appearances of distant land were seen in the eastward and westward, but all points except the one we entered, presented an impenetrable barrier. We here filled up our water tanks with ice taken from an iceberg along side the ship.

We made our magnetic observations on the ice. The dipping needles gave 87 deg. 30 minutes for the dip, and our azimuth compass was so sluggish on the ice, that on being agitated, and bearings taken again, it gave nearly three points difference; the variation being 12 deg. 35 minutes east. A few days afterwards, about one hundred miles further to the west, we had no variation, and thence it rapidly increased in westerly variation, from which I am of opinion that when in the ice bay we could not have been very far from the south magnetic pole. This bay I named Disappointment Bay, as it seemed to put an end to all our hopes of further progress south.

On the 27th, we fell in with the Porpoise, in long. 142 deg. 20 min. east, and lat. 65 deg. 51 minutes south, and parted company shortly afterwards.

On the 28th, at noon, after thirteen repulses, we reached longitude 140 deg. 30 minutes east, and latitude 66 deg. 33 minutes south, where we again discovered land bearing south, having run over forty miles, thickly studded with icebergs. The same evening, we had a heavy gale from the southeast, with snow, hail, and thick weather, which rendered our situation very dangerous, and compelled us to retrace our steps by the route we had entered. During this gale, we were unable to see the distance of a fourth of a mile, constantly passing near icebergs which surrounded us and rendering it necessary to keep all hands on deck. On the morning of the 30th the gale abated, and we returned by the same route to reach the land, when the dangers we encountered among the ice the preceding night, and our providential escape, were evident to all.

We ran towards the land about fifty miles, when we reached a small bay pointed by high ice cliffs and black volcano rocks, with about sixty miles of coast in sight, extending to a great distance towards the southward, in high mountainous land.

The breeze freshened to a strong gale, which prevented our landing, and compelled us to run out after sounding in thirty fathoms water; and within two hours afterwards the ship was again reduced to her storm sails, with a heavy gale to the southward, with snow, sleet, and a heavy sea, continuing thirty-six hours, and if possible, more dangerous than that of the 28th and 29th, owing to the large number of ice islands around us; after which I received reports from the medical

officers, representing the exhausted state of the crew and condition of the ship, of which the following are extracts:

The medical officer on duty, reported under date of the 31st Jan. that "the number on the sick list this morning is fifteen; most of these cases are consequent upon the extreme hardship and exposure they have undergone during the last gales of wind, when the ship has been surrounded with ice. The number is not large, but it is necessary to state, that the general health of the crew is, in our opinion, decidedly affected, and that under ordinary circumstances the list would be very much increased, while the men, under the present exigencies, actuated by a laudable desire to do their duty to the last, refrain from presenting themselves as applicants for the list.

"Under these circumstances we feel ourselves obliged to report, that in our opinion, a few days more of such exposure as they have already undergone, would reduce the number of the crew by sickness to such an extent as to hazard the safety of the ship and the lives of all on board."

After which, the surgeon, being restored to duty, reported to me as follows:

"I respectfully report that, in my opinion, the health of the crew is materially affected by the severe fatigue, want of sleep, and exposure to the weather, to which they have lately been subjected, that a continuance of these hardships, even for a very short period, will entirely disqualify a great number of men for their duty, and that the necessary attention to the health of the crew and their future efficiency and usefulness, demands the immediate return of the ship to a milder climate."

Deeming it my duty, however, to persevere, I decided to continue, and steered again for the land, which we had named the Antarctic Continent.

We reached it on the 2d of February, about sixty miles to the westward of the point first visited, where we found the coast lined with solid perpendicular ice cliffs, preventing the possibility of landing, and the same mountains trending to the westward. From thence we proceeded to the westward along the ice barrier, which appeared to make from the land, until the third, when we again encountered a severe gale from the southeast, with thick weather and snow, until the 7th of February, when it cleared up sufficiently to allow us to see our way clear, and we again approached the perpendicular barrier of ice, similar to that which we had previously seen as attached to the land; the same land being in sight at a great distance. We stood along the barrier, about seventy miles to the westward, when it suddenly tended to the southward, and our further progress south was arrested by a solid barrier of field of ice. After an unsuccessful examination for twenty-four hours in all directions, we continued to the westward along the barrier, as usual, surrounded by ice islands.

On the 8th and 10th, (being on the 8th in long 127 deg. 7 minutes east, latitude 65 deg. 3 minutes south,) we had similar appearances of distant mountains, but the compact barrier extending from east to west by south, prevented a nearer approach.

On the night of the 9th February, being the first clear night for some time, we witnessed the aurora australis.

We continued on the 10th and 11th westward, with southeast winds, and fine weather, close along the barrier, which was more compact, with immense islands of ice enclosed within the field ice.

On the 12th, we again saw the distant mountains, but were unable to effect a nearer approach, being in long. 112 deg. 16 minutes east, latitude 64 deg. 57 minutes south, and I was again compelled to go on to the westward.

The ice barrier tending more to the southward, induced me to hope that we should again succeed in approaching nearer the supposed line of coast. On the 13th, at noon, we had reached long. 107 deg. 5 min. latitude 65 deg. 11 minutes south, with tolerably clear sea before us, and the land plainly in sight. I continued pushing through the ice until we were stopped by the fixed barrier about fifteen miles from the shore, and with little or no prospect of effecting a landing.

I hauled off for the short night, and the next morning made another attempt at a different point, but was equally unsuccessful, being able to approach only three or four miles nearer, as it appeared perfectly impenetrable. Near us were several icebergs, colored and stained with earth, on one of which we landed, and obtained numerous specimens of sandstone, quartz conglomerate and sand, some weighing a hundred pounds. This, I am well satisfied, gave us more specimens than could have been obtained from the land itself, as we should no doubt have found it covered with ice and snow one hundred or more feet in thickness. We obtained a supply of fresh water from a pond in the centre of the same island. Our position was long. 106 deg. 40 minutes east, latitude 65 deg. 57 minutes south, and upwards of seventy miles of coast in sight, trending the same as that we had previously seen.

Although I had now reached the position where our examinations were to terminate by my instructions to the squadron, I concluded to proceed to the westward along the barrier, which continued to be much discolored by earth, and specimens of rock, &c. were obtained from an ice island. A sea leopard was seen on the ice, but the boats sent did not succeed in taking him.

On the 17th February, in long. 97 deg. 30 minutes east, lat. 64 deg. south, land was again seen at a great distance towards the southwest. We now found ourselves closely embayed, and unable to proceed in a westerly direction; the ice barrier trending around to the northward and eastward, compelled us to retrace our steps. We had entered a deep gulf on its southern side, and it required four days beating along its northern shore to get out of it. During this time our position was critical, the weather changeable, and little room in case of bad weather. It fortunately held up until we found ourselves again with a clear sea to the northward.

The ice barrier had now trended to about 62 deg. of latitude; the wind having set in from the westward with dark weather, and little prospect of seeing the land or making much progress to the westward

prior to the 1st of March, thereby losing time which might be spent to advantage for our whaling interests at New Zealand, I determined to proceed to the north on the evening of the 21st.

There was a brilliant appearance of the aurora australis on the 17th of February. in long. 97 deg. 39 minutes east, lat. 64 deg. south; also on the 22d Feb., in 103 deg. 30 minutes east, lat. 58 deg. 10 minutes south; on the 25th Feb. in 117 deg. 31 minutes east, lat. 53 south; and on the 1st March, in long. 137 deg. east, lat 49 deg. 30 min. south.

The result stated in this report leads me to the following conclusions:

1st. From our discoveries of the land through forty degrees of long. and the observations made during this interesting cruise, with the similarity of formation and position of the ice, during our close examination of it, I consider there can scarcely be doubt of the existence of the Antarctic continent, extending the whole distance of seventy degrees from east to west.

2d. That different points of the land are at times free from the ice barrier.

3d. That they are frequented by seal, many of which were seen, and offer to our enterprising countrymen engaged in these pursuits, a field of large extent for their future operations.

4th. That the large number of whales, of different species, seen, and the quantity of food for them would designate this coast as a place of great resort for them. The fin backed whale seemed to predominate.

We proceeded on our cruise to the northward and eastward with strong gales, until we reached the latitude of certain islands laid down on the charts as the Royal Company's Islands, about six degrees to the westward of their supposed locality; I then stood on their parallel, and passed over their supposed site, but we saw nothing of them, or any indication of land in the vicinity. I feel confident, as far as respects their existence in or near the longitude or parallel assigned them, to assert that they do not exist.

The last ice island was seen in latitude 51 deg. south. A few specimens of natural history were obtained and preserved during the cruise.

As I conceive it would be unbecoming in me to speak of our arduous services, the report and accompanying chart of our cruise must speak for us; but I cannot close this report without bringing to your notice the high estimation in which I hold the conduct of the officers, seamen, and marines, during this antarctic cruise, the manner and spirit, together with the coolness and alacrity with which they have met the dangers and performed their duties. I trust that they will receive from the government some gratifying notice of it. All I could say in their favor would fall far short of what they deserve.

I shall ever bear testimony that they have proved themselves worthy the high character borne by our countrymen, and the navy to which they belong.

I have the honor to be, sir, most respectfully your obedient servant,

CHARLES WILKES,
Com'dg Exploring Expedition of the U. S.

To the Hon. James K. Paulding,
Secretary of the Navy.

THE ARCHIMEDEAN SCREW, FOR STEAM VESSELS.

A number of the late English journals have given descriptions of the performance of the steam vessel Archimedes, a vessel built for the purpose of making an experiment of what is called the Archimedean screw for propelling the vessel, instead of applying the propelling power by means of paddle-wheels, as in common steamboats. This vessel, after having made several trials of her speed and power in the British waters, was at length chartered for a voyage to Oporto for the conveyance of passengers. She sailed on this voyage on the 1st of August. The Brighton Gazette, after giving some description of her performance, and after naming several officers of the navy who have reported favorably of the invention, among whom are vice admiral sir Robert Otway, Admiral Fleming, Capt. Evans, and Lieut. John Allen Wright, makes the following enumeration of its good properties:

Among the principal advantages which the new propeller affords are these:—that in rivers and harbors the *Archimedes* can be put about in twice her own length; she can be stopped as quickly as any other steamer, and goes equally fast ahead or astern, though not built to contend with river boats, either by her draught of water or by the form of her bottom, (she having been constructed for a sailing and sea-going craft;) she has been found, with engines not fully effective, to be equal in speed to any of them; boats going along side incur no more risk than in boarding a sailing vessel; the swell, so dangerous to small craft in rivers, and so injurious to the banks, is not caused by the *Archimedes;* her wake is distinguished by no more ripple than that of any vessel under sail; she can thread her way through obstacles, between which the projection of paddle-boxes prevents an ordinary steamer from venturing, and she can enter locks and canals from which the other would be excluded; she can lie close alongside other vessels or quays for the discharge of her cargo, or the embarkation or landing of passengers, without being prevented by those cumbrous appendages.

But it is as a powerful auxiliary to sea-going vessels, by enabling them to make head against adverse winds and currents, and in calms, that the screw propeller grounds its chief claims to attention. The power being seated where it cannot be injured will enable the seaman to give his ship way, even if dismasted, or unable from the fury of the wind to show any canvas—will allow her head to be kept to the wind, and by the rapidity with which the vessel answers the helm, at the very instant of putting the screw in motion, will facilitate various operations, which will be obvious to the seaman. By a simple contrivance the propeller may be connected with the machinery, or disconnected from it, in the short space of two minutes; and the screw is not found to offer any sensible resistance to the progress of the vessel when going by the aid of sails alone.

Another most important advantage is that the vessel would admit of guns being placed on the broadside, which in the common steamer is prevented by the large space occupied by the paddle-boxes; and the

propeller being placed out of the reach of an enemy's shot, would enable the vessel to be used in naval warfare, which with the paddle-boxes could not be the case, owing to the facility with which the present vessels could be disabled.

[From the Liverpool Standard, June 9, 1840.]

ARRIVAL OF THE "ARCHIMEDES" AT LIVERPOOL, AND EXPERIMENTAL TRIAL OF HER POWERS.

It has long been acknowledged by men who are conversant with mechanical principles, that the common paddle-wheel, or rather water-mill wheel, which has hitherto been the instrument of propulsion for our steam vessels, whether in rivers or on the ocean, is beset with certain disadvantages, which, however the principle might be modified, presented great, if not insurmountable obstacles, either to increased speed beyond a limited rate of velocity; or material reduction in the power, weight, and size of the engine, consumption of fuel required; or, consequently, of increased capacity for stowage without great additional cost, and a vast increase of tonnage.

The principal disadvantages alluded to we need but briefly notice. The principle of the paddle-wheel is obviously imperfect as a mode of ship propulsion. If the wheel be proportionately small, its operation is principally to tear up or scratch the water: if large, this defect is partially remedied, but far from wholly. The fact is, the first operation of a revolving paddle-wheel is, to a certain extent, to smash down the water, and its last operation is, to a certain (and a great) extent, to lift the water—elevating a sort of fountain or cascade abaft the paddle-box, all of which involves an expenditure of steam power to a considerable extent, without propelling the vessel. The increasing of the size of the wheel, so that at length a small but wide portion or segment of the periphery comes in contact with the water, diminishes this disadvantage, but at the expense of additional leverage against the engine—that leverage to be overcome being half the diameter, or the distance from the paddle-shaft to the floats or paddle-bands. There is nothing, therefore, for it, but sheer tearing force of steam.

Various modifications of the paddle-wheel have been produced—some with paddle-boards so contrived that they dipped perpendicularly into the water, and so rose out of it; others with the boards placed obliquely, and others placed or worked in various ingenious ways, to remedy one or other of the defects already alluded to. These, however, from their complicated structure, and liability to derangement and breakage, have generally been abandoned; though we must notice the dividing of the original "one" paddle-board into two or three like steps, with interstices between, as a decided improvement, in the freeing of the wheel from water, the plan of our townsman, Mr. Shaw, of the Dublin Steam-packet Company, a gentleman of much experience in ocean steam navigation.

Another objection to the paddle-wheel is its weight and unwieldy bulk, rising over the upper works of a vessel, and presenting a rather

unseemly hump, like that of the dromedary. True, this has in modern large vessels been much reduced; but it is still a top weight—still does the paddle-box present a large surface to a beam wind, without the possibility of "taking in a reef"—and still is a vessel, with such an incumbrance, liable so to roll about, or to be thrown so far on one side, that one of the wheels may be thrown for a time out of the water, to the detriment of the engine and its working.

Another, and the final objection to the paddle, is, that the vessels so propelled cannot carry sail to any extent, without an equal derangement of their lateral equilibrium,—in other words they must be worked so, that the wheels must, as far as possible, have an equal hold of the water on each side—which cannot be maintained with a lateral pressure of sail. Great, indeed wonderful, improvements have been made in marine engines: and steam navigation has, consequently, gone on increasing and extending its ramifications and beneficial effects to the remotest quarters of the globe. All that we contend is, that there was room for improvement, indeed for entire novelty, in the "mode of propulsion," and that therefore every new and ingenious application of a known mechanical agent, or instrument, or invention of a new one, that may produce increase of speed, with economy in fuel, and consequent saving of stowage, should be fostered by an intelligent public, without any feeling of jealousy, as an accession of maritime and commercial power; an additional means of natural wealth, and natural protection; and greater than all, as a means of approximating country to country, and disseminating the blessings of civilization, religion, and good-will amongst the great family of mankind.

These remarks have been suggested by the arrival at our port, since our last publication, of the *Archimedes*, steam-yacht, and the pleasure we yesterday experienced in witnessing her performance in our river. It would be presumption in us to assume, from her success hitherto, that her mode of propulsion is so far superior to that now in use, that it must be generally adopted. We will not go so far until further experiments, and, doubtless, further improvements in that mode have become developed. We are bound, however, to state, that so far the superiority of this novel application appeared to many practical nautical gentlemen, and others versed in steam navigation, to be altogether decisive. There can be no doubt of its superiority, if once fully brought out with those improvements which practical experience will suggest; and even now, as will be found in the sequel, the *Archimedes* has outrun several crack steamers in our river, and has, moreover, shown that she is a fast sailer under canvas, and independently of steam. But we must permit our readers to judge for themselves.

THE ARCHIMEDES.

The application of the "Archimedean Screw" for the propulsion of vessels, was first tried by Mr. Francis P. Smith, the present patentee, about four years ago, on a boat 32 feet in length, and about six tons burthen. The screw was worked by a two-horse engine, and such was the success of the first experiment on this small scale, that the present

vessel was finally projected and completed. Mr. Smith, an intelligent young man, having, by that perseverance which is peculiar to genius, overcome numerous obstacles, opposed by prejudice and opinion, and by constant devotion to his object and a great outlay of capital, achieved what may assuredly be esteemed a triumph of modern science.

The *Archimedes* is rigged as a smart three-masted schooner, with her masts raking. She is a beautiful model, and, having no paddle-boxes, she has the appearance of a pleasure yacht, the flue being comparatively slender. The following are her dimensions :—

Length over all, - - - - -	125 feet.
" between perpendiculars, - -	107 "
Extreme breadth, - - - - -	26½ "
Depth of hold, - - - - -	13 "
Draft of water, (average) - - -	10 "
Capacity, - - - - - - -	240 tons.
Power of engines, - - - - -	80 horses.

The mode of propulsion is by, it might be said, a portion only of the Archimedean screw. When the vessel was first tried, a full turn of that species of screw like a patent cork-screw, (on a central straight spindle) was employed. The inventor afterwards, for the sake of compactness, introduced the double-threaded screw of half a turn to each thread, as more applicable to this vessel, although he rather prefers the other. This is of iron, and is fixed in the run of the vessel, in the dead wood in front of the stern post, and works transversely with the keel, radiating the water in every direction. The diameter of the screw (which is on the principle of the scull) is five feet nine inches, and its length five feet. It would almost appear impossible that so small a portion of machinery could propel a vessel of such length, but the hold it takes of the water, and the velocity with which it turns gives it great advantages. It is quite under the surface, and is therefore invisible by spectators either on board or on shore. It is worked by a spindle, forming its axle, running fore and aft, and its velocity is acquired by spur wheels and pinions. Each revolution of the larger wheel, turned by the cranks of the engines, gives by the multiplied power, five and one-third revolutions of the screw. The hole or aperture required for the screw is square, and the operation of the propeller does not appear to interfere with the steering, which is managed with the facility of a small boat. The shafts of the engine work, fore and aft—the cranks working transversely, so as to communicate the power directly by the cog wheels to the screw. The larger wheel is toothed or cogged with hornbeam (timber). The engines are compact, but of short stroke, and not, we think, equal to what we could accomplish in our good old term, " if we were put to the screw." The whole apparatus, indeed, is necessarily as a new application capable of improvement, which will gain both compactness and speed, and are already obvious to the inventor and his friends—though even now the *Archimedes* is a crack steamer. The vessel has given origin to " the Ship Propeller Company."

THE TRIP OF THE ARCHIMEDES, JUNE 8.

By special invitation, a number of gentlemen and their friends, including ladies, went on board about noon. The vessel was lying moored to the buoy off George's pier, and "set screw" about twenty minutes afterwards. Captain Chappel, R. N., who has accompanied the vessel by direction of the Admiralty, from London and other intermediate ports, including Bristol and Plymouth, to report upon her capabilities, was on board, and was unremitting in his polite attention to all on board—explaining to them, in conjunction with Mr. Smith, the inventor, the whole principle of the propelling mechanism. The day was delightfully fine; the deck and cabin of the vessel roomy and comfortable, and the whole trip highly pleasant and exhilarating.

There were from fifty to sixty ladies and gentlemen on board, and all appeared highly to enjoy the experimental trip. There were on board representatives of the first commercial, steam navigation, and engine and ship-building houses, in the town. We noticed amongst those present, the Mayor, Captain Bevis, R. N., Mr. Fawcett, Mr. Wiltwick, Mr. Samuel Turner, Mr. H. Littledale, Mr. Brocklebank, Mr. Jno. Pollock, Captain Fayrer, Captain Engledue, Mr. Aspinall, Mr. Byron, Mr. Gusrew (of Scotland,) Mr. Wilson, Mr. Smyth, and many other gentlemen. Amongst the ladies were several of Captain Bevis's family.

The vessel first steamed up to Birkenhead, at a good speed, and afterwards ran back to opposite the George's Pier, and thence down the river and North Channel, and round the Formby Light Ship. Her utmost speed was about nine and a half knots. She was looked upon with astonishment by hundreds on the quays, and others on shipboard who had not before seen her. On returning up the river, the guests were invited to the spacious cabin, and partook of a sumptuous cold collation, with wine, &c. The Mayor proposed "Success to the *Archimedes*, and to the spirited company who had sent her out," which was drank with enthusiasm. A second set of guests afterwards sat down, and numerous toasts were drank.

On running down, the *Archimedes* beat the swiftest of the Egremont boats, and on going up the Sloyne, she passed her Majesty's tender the *Red Wing*. Indeed, no boat on the river had any chance with her. She turned in a very short space of room. After another run past the piers and down to the rock, the steam was entirely put off and she beat up under sail—back to the Sloyne in good style, showing good sailing qualities, though cramped for sea-room. She then returned to her moorings off the pier, and landed her passengers—all highly delighted with the trip and the success of the experiment.

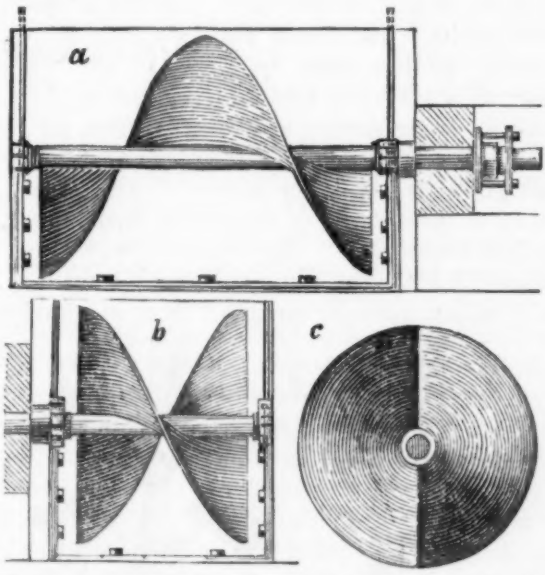
The only disagreeable sensation is a rumbling noise made by the cog-wheels, which, however, engineers state may be overcome or greatly reduced.

We had purposed to be much more minute, but must for the present confine ourselves to a few additional particulars.

The screw on the same principle may be applied to sharp sailing vessels with advantage. The propelling power is not affected by the

vessel leaning to leeward. The screw may be thrown out of gear in two minutes, so that the vessel may be put under sail alone. The screw is then turned by the motion of the vessel; but the drag is not more than ½ a mile in 10. The *Archimedes* has steamed 10½ knots, has gone under sail and steam conjointly, 11¼ knots, and has gone 9 under sail. There are several vessels in London, to which the principle is about to be applied: many naval officers have highly approved of it; and we learn that Admiral Sir E. Codrington has expressed an opinion to the Admiralty, that a frigate ought to be immediately fitted out with the "screw."

A correspondent of the Liverpool Albion gives the following description of Smith's Archimedean Screw, and also of Ericsson's Propeller, which has been applied to the steamer Robert F. Stockton. The writer subjoins a description of the performance of the latter, which he supposes to have a preference over the former. We have thought it desirable to publish the description of the two in connexion, that they may be compared by the reader.

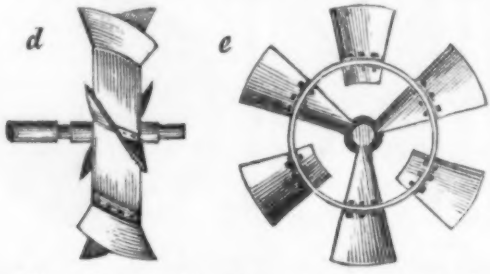


An Archimedean screw, properly speaking, is a single thread winding spirally around a shaft as a centre, and terminating at any desired angle at its circumference. It has been familiarly described as resembling a patent corkscrew. Used as a propeller, an inclination of forty-five degrees, with its axis, must be the best, as one revolution will then give the same progressive as it does lateral motion—that is to say, 3 1-7th times its diameter. Constructed with its *thread* terminating at this angle, (being 5 ft. 9 in. in diameter,) its length should be 18 feet: such a screw, however, applied to the *dead wood* of a ship would be inconvenient, hence the necessity of reducing it. The angle of the thread must, of course, be *reduced* in proportion, and the speed of the propeller *increased*; 8 feet is the length of the Archimedean screw *a*, with one

turn of the thread; but the two thread screw *b* is the one now in use (even 8 feet being rather inconvenient to be exposed to the surge of a ship in a heavy sea.) The screw *b*, having two half turns of the thread at the same angle with the one turn of *a*, will have the same progressive motion, say 8 feet for each revolution. (*c* is an end view.) The speed of her engine, on the first day of trial here, was 27 revolutions in a minute, which, multiplied by the accelerated motion given by a series of cog wheels, of 5½, will give 144 revolutions of the screw. 144 multiplied by 8, the progressive motion of each revolution, gives 1,152 ft. in a minute, equal to 13 miles and 9-100ths in the hour.

Her speed, on this occasion was ascertained to be 9 knots (by log.) 10 miles, I understand, is claimed. Let it be granted, although she never performed it on that day, what has become of the 3 and 1-10th miles unaccounted for?

There are several obvious cases of loss of power in the Archimedean screw. First, Every particle of water impinged by the forward section must remain in contact until it passes off at the after part of the screw. In *a* this distance would be 25 feet at the circumference and 8 feet at the axis, the mean would be 16½ feet. In the present adaptation of the two threaded screw *b*, the mean distance will be 8¼. During this contact, a revolving motion must be given to the water, thereby decreasing its effect as a resisting medium. Second, The power applied at the centre and for some distance outwards must be very inefficient: the angle of the thread with the axis being so acute, it will have little other effect than giving a revolving motion to the water. Third, The necessary rapidity of the motion of the screw must cause great friction, its speed being 144 revolutions. Its circumference must, consequently, move at the rate of 3,600 feet, more than half a mile in a minute, the lateral friction of which must be no small item in retardation.



Ericsson's propeller (fig. *d* side view, *e* end view) may be described, when of corresponding dimensions, as a section of a six-threaded screw. The threads, instead of starting from the centre, are attached to a hollow cylinder or hoop of wrought iron, which is firmly secured to the axis by three radiating spiral arms. To this cylinder or hoop, six planes are strongly riveted on the outer surface, and three of smaller dimensions on the inner, between the radiating arms. They are all placed at such an angle as will give, with 6 feet diameter, 16 feet progressive motion for each revolution. The dimensions would be 6 feet in diameter and but 20 inches in length: its application to a ship or steamer, already built, would, therefore, be extremely simple.

It will be seen, that, in this propeller, the objections stated against the continuous screw are greatly obviated. The water impinged is more quickly parted with, and, therefore, affords, during the time of contact, a more perfect resistance. The power being applied only where it is most efficient, near the circumference, little comparative motion is given to the water; and the required speed being so much reduced by the more advantageous angle at which the *threads* of the screw can be placed, the friction of their passage through the water will, likewise, be reduced in the ratio of the squares of their relative velocities.

Let us now compare the actual performance of Ericsson's Propeller, in the small iron boat the Robert F. Stockton, with that of the screw in its present improved modification in the Archimedes.

From the Mechanics' Magazine.

We are now gratified in giving the result of some of her first experiments on the Thames. On Saturday week she was on the river with a party of about thirty gentlemen, invited to witness her performance, all of whom were quite astonished at her speed, nine miles being run, *with the tide*, in 35 minutes. Suppose 2½ miles allowance for the tide, there would be left full 12 miles an hour for the speed of the boat. But her triumphant experiment was made on Wednesday last, when she was put to the task she was designed for, showing her power for towing.

No. 1. Neptune, 15 feet beam, 4 feet 6 inches draught.
2. Joseph, 15 feet 7 inches beam, 4 feet 6 inches draught.
3. Urgis, 13 feet 4 inches beam, 4 feet draught.
4. Mary, 15 feet 2 inches beam, 4 feet 6 inches draught.

Four loaded coal barges, of the dimensions and draught as described above, were made fast to the Robert F. Stockton, making in all, 50 ft. 1 inch beam, with square ends and upright sides, besides the steamer. All ridiculed the idea of attempting, with so small a boat, to tow such an immense, ugly mass, and the coal-heavers swore they would "eat her if she moved them at all." In less than one minute from the time of the starting of the engine, it was at the speed of 49 revolutions in a minute, and actually towed the whole 1 *measured mile in* 11 *minutes*, the water being perfectly still. The difference of speed between the propellers and the body moved being but 22 per cent., while the loss of power with wheels over the side, in the best constructed boats, running light, is allowed, both in theory and practice, to be 33½.

Further experiments will, doubtless, be made, the results of which we shall take great pleasure in laying before the public; and, in the mean time, we venture to predict, that, for canal and for ocean navigation, Ericsson's Propeller is destined to supersede every other application of the power of steam.

From the London Times.

ERICSSON'S STEAM-BOAT PROPELLER.

It is a fact requiring no demonstration, that almost incalculable advantages would be derived from steam navigation if the present paddle-

wheel were of such a nature as not to be retarded, and not to waste the steam power at sea in rough weather, or during the healing of the vessel produced by the pressure of sails, in using that cheap auxiliary the wind. It is admitted, that the loss of power in the best constructed paddle-wheels, arising from their unequal immersion, from the angle of incidence at which the paddle strikes the surface and from the receding of the water, is about one-third. It is also a fact readily admitted, on considering the defects alluded to, that no material improvement can be effected unless that mode of applying the power is superseded by some propelling apparatus capable of acting with full efficacy when wholly under water as well as when partially immersed; in other words, a propeller which, under all circumstances, is capable of imparting an equal force to the vessel whilst heeling, or whilst subjected to sudden or gradual variations in the draft of water, whether produced by a heavy sea, pressure of sails, or by increase or diminution of cargo. These conditions are fulfilled by Capt. Ericsson's Propeller, which may be briefly described as consisting of two wheels of wrought iron, formed by a series of spiral plates, riveted to narrow cylinders of the same material, which are connected by radiating spiral arms to the centre. These wheels are attached to shafts (the one to which the inner wheel is fixed being hollow) passing through the stern of the vessel, and revolving in opposite directions, each series of plates being so placed on the cylinders.*

The results of a variety of trials prove, that great saving in time and expenditure ensue: we, therefore, anticipate important changes in steam navigation from its introduction and use.

The great power exhibited, during the early trial of this propeller, about 18 months since, induced some American canal proprietors to order an iron steamboat, with a 50-horse power engine, to be fitted with the new propeller. This small iron steamer, called the Robert F. Stockton, has lately arrived in the Thames from Liverpool, and will shortly proceed to the United States: her dimensions are 70 feet length on deck and 10 feet beam. A variety of experiments have been made in presence of several scientific and practical men, who consider the success to be perfect. Although constructed for towing purposes only, this boat has frequently gone at the rate of 12 miles an hour. As to her power as a tug, we are informed, that, on Tuesday last, January 29, she towed the American packet ship Toronto from Blackwall to the lower point of Woolwich, a distance of 3¼ miles, in 40 minutes, against the flood tide, then running from 2 to 2½ miles; thus towing her through the water at the rate of upwards of 6 miles an hour. The Toronto is 650 tons burthen, she measures 32 feet beam, and drew at the time of trial, 16 feet 9 inches. Thus presenting a sectional area of more than

* In some cases, this construction, with a double propeller is required. In shoal water, for instance, when only half the wheel can be immersed; and also when the boat is intended to be used as a tug, to tow heavy masses at a slow speed, and great resistance is needed. The Stockton was constructed for this purpose. But, when speed only is required, a single wheel will, in all cases, be preferable, with the planes set at a mean angle of 45 degrees.

460 square feet. Now, the fact of this body having been moved at a rate of upwards of 6 miles an hour, by a propeller, or piece of mechanism, measuring only 6 feet 4 inches in diameter, and occupying less than 3 feet, is one which, scientifically considered, is interesting in the extreme, and, in a practical or commercial point of view, is of immense importance. We understand, a company is about being formed, to apply the propeller to a ship of 1000 tons burthen, to be employed in transatlantic navigation; and, as her sailing qualities will not at all interfere with her steaming power, it is confidently anticipated, that increased safety will be ensured and her passage greatly accelerated, at a saving of, at least, one half the fuel.

And again, from the same journal:

The experimental iron steamboat, Robert F. Stockton, constructed for testing Captain Ericsson's Propeller, which we noticed some time since, being on the eve of departure for the United States, at the request of a number of scientific gentlemen who were desirous of witnessing her performance, the proprietor consented to another trial being made, and, on Saturday last, a large party was invited for this purpose. Among those present were Major General Sir John Burgoyne, Chairman of the Board of Public Works, and Commissioner for Steam Navigation, &c. in Ireland; Major Robe, of the Royal Engineers; Mr. James Perry, of Dublin, lately concerned in canal navigation; Messrs. Vignolles, Delafield, Reid, Napier, and Thomas; several distinguished Swedish naval officers; Captain Stockton, of the United States Navy; Mr. Ogden, Consul of the United States at Liverpool; Mr. Young, an American civil engineer, &c. Some 30 gentlemen were present, and the result of the trial gave universal satisfaction.

One of our correspondents having before described the construction of the new propeller, we will now more particularly direct attention to the effect produced during the trial, which appeared quite conclusive as to the success of this important improvement in steam navigation. The distance from the West India South dock to a point opposite Woolwich Church and back, measuring 37,000 feet, was passed in 45 minutes precisely, (21 minutes with, and 24 against the tide,) the boat towing at the time a heavy city barge on the one side, a large wherry on the other, and another wherry astern. The speed of the engine being repeatedly timed by one of the gentlemen present, Mr. Young, an intelligent American engineer, it was found to average 66 revolutions per minute, or 2,970 during the 45 minutes. The inventor demonstrated, by accurate working drawings, that the spiral planes of the propeller are set at such an angle that, had the resistance of the water been perfect, the progress of the boat could only have been 13 2-10th feet at each revolution, or 39,204 feet during the time, instead of 37,000 actually performed, thus showing a loss of less than 6 per cent. Respecting the engines for working the propeller, it was observed, that they may be made much stronger and more compact than ordinary marine engines, in consequence of the power being applied directly to the shaft which works very near the bottom: this, for sea-

going vessels, will be very important, and their original cost must be considerably reduced, as all the paraphernalia of shafts, wheels, wheel-guards, &c. will be dispensed with. We were struck with the great regularity of the motion, not the slightest jar being perceptible. The engines consist of two cylinders 16 inches in diameter, with 18 inches stroke, and are worked by steam, of a pressure varying from 35 lbs. to 55 lbs. to the square inch: their construction is extremely simple, and evinces a knowledge of steam machinery in the inventor which is calculated to give additional confidence in the success of his propeller in all the varieties of its application for the canal, river, or ocean navigation.

It will be seen that in her first experiment, towing four heavy-laden coal barges at the rate of 5½ miles the hour, the difference of speed between her propeller and the mass moved, was only 22 per cent. Her ordinary speed, running light, was proved to the satisfaction of a large party of scientific gentlemen who witnessed her performance, to be between 11 and 12 miles an hour.

In her second experiment she towed the packet ship Toronto upwards of 6 miles an hour. The speed of her engines is not given in this trial; but the loss must, necessarily, have been less than in the first. But, in the third, all the data are given by which it may be accurately estimated. She had a heavy city barge, in which thirty persons might sit comfortably under a standing awning, lashed on one side, a large wherry on the other, and another wherry towing astern,—with these obstructions she ran, by *measured distances*, upwards of 9 miles an hour, through the water, independent of tide, and her loss of power was less than 6 per cent. The revolutions of her propellers, it will be seen, were 66 in a minute, and her progressive motion (supposing a perfect resistance) could only have been 13 2-10ths feet.

The loss, in well constructed side wheels, is admitted to be	33⅓	per cent.
The loss in the Archimedes screw, as proved here	25	"
The loss of Ericsson's propeller, towing at the rate of 5½ miles the hour,	22	"
Ditto, running light, less than,	6	"

The foregoing narratives record facts of great interest in the history of steam navigation. The experiments made by the two vessels, illustrate the successful application of a principle in the mode of propulsion, not entirely new, but which has not been so satisfactorily applied before. The general principle applied to the two vessels is the same, but the two inventions are quite different in form. Further experience will show which of the two forms is best, and will probably lead to important results in the introduction of an improvement in this branch of navigation, which for certain purposes will be found of great utility.

CHRONOLOGY.

June 20. *Statistics of Mortality and Disease in London.* Dr. Olynthus Gregory delivered a lecture on this subject at the Royal Institution, which is now rendered additionally interesting and accurate from the operation of the new system of registration. The limits of the metropolis have not hitherto been well defined, but the registrar-general has added all the metropolitan parishes, in distinction from those which are more strictly rural, the separation being defined by the manners of the inhabitants. According to this arrangement, the metropolis comprises an area of 70 square miles, or about 9½ miles in diameter, thus assuming a radius of five miles from St. Paul's cathedral. Stoke Newington and Dulwich terminate the line from north to south, and Woolwich and Hammersmith that from east to west. The registrar-general has also divided London into five great districts, called north, south, east, west, and central London, the first including the parishes of St. Pancras and Marylebone, of which no notice is taken in the older bills of mortality, but in which the population has in nine years increased by 117.000. Every year London is adding to its population that of a city equal to York. The total population of the metropolis is now 1.950.000, and by the end of the next year it will exceed 2.000.000; and in ten years a population of 400.000 has been added, which is as much as the ancient city in the time of Charles II. There was an imperfection in the working of the act, as the registration of births is not compulsory; but the lecturer observed that the poorer classes were becoming better satisfied with the measure, and more willingly gave the information. One of the results of the registration shows a diminution in mortality, and it is a fact that the value of human life has increased all over the kingdom. The mortality of the present year has been much less than the usual average, only 9.000 having died in the last ten weeks, being at the average of 900 per week; and Mr. Fisher, the surgeon of the metropolitan police force, states that the men in that establishment have never been more healthy. A curious fact was mentioned with respect to the climacterics of life, which does not appear to have been noticed by any of the assurance offices, that about twice the number of deaths occur at the ages of 39 and 41 of those in the intervening year, and the same singular case exists in the years before and after 50, 60, and 70. The most unhealthy district in London includes the parishes in the neighborhood of Whitechapel, whilst the suburban districts of Camberwell and Hackney are the most healthy. The healthiest parish in London is that of St. George, Hanover-square, for whilst 39 out of 1.000 die annually in Whitechapel, the proportion in the former parish is only 17. These circumstances show the necessity of dividing and breaking up all dense districts, which many of the recent metropolitan improvements have effected, and many of the contemplated ones propose to do. With regard to the variations of disease, it has been said, that while vaccination saves from the small-pox it opens the road to others; but this is true only as it closes one avenue to mortality, the law of which is that a certain number must die every year, so that if one door is closed another is open. Formerly old age had the sixth place in the list, but now it is the second, consumption only being before it. The lecturer stated in the course of his remarks, that the Government are making active preparations for taking the census in May of next year, when the decennial period expires.

Paris, June 22. The French chamber of deputies, terminated its session, after a duration of 180 days, from Dec 23, of which the chamber was in actual session 101 days. The average length of the daily sittings was from three to four and a half hours. The five first days of the session were devoted to the verification of the powers of the new members, and the formation of the bureaux. M Sauzet was chosen president by 274 votes, which was a majority of 78 over those received by his competitor, M. Odilon Barrot. The political questions discussed in the chamber which excited any animation, and deeply interested public opinion, were the law for the dotation of the Duke de Nemours, which was rejected—the law for the appropriation of 1,000,000f. secret service money, which was carried against an earnest opposition, and the law for the *translation* of the remains of Napoleon. The laws which excited any prolonged debates were, that for the conversion of the rents, which continued

through four sessions, and was passed by a feeble majority of 23 votes, and was rejected in the peers; the law upon salt, for relieving the eastern departments from a burdensome monopoly, which occupied three sessions; the law upon sugar, which was prolonged through seven sessions, and fixed the difference of duty on foreign sugar at 20 francs; the law for extraordinary credits for Algiers, which was debated for three days; the law for the extension of the charter of the Bank, which was adopted after four long sittings; the law upon rail-roads, which occupied the chamber through six sessions; and the discussion of the budget of expenses, which continued through nine sessions, and the budget of receipts two sessions. Among the laws passed were one relating to the sale of tobacco; one for the levy of 80,000 men; one for the distribution of the sums paid by the government of Hayti; and one for establishing transatlantic navigation by steam packet boats. Among the credits for the service of 1840 and 1841, were 2,400,000 francs for fire arms with percussion; 1,000,000 for three bridges; 7,100,000 for internal navigation; 1,000,000 for the translation of Napoleon's remains; 1,234,000 for works upon the garden of the Luxenburgh, and two public hotels; six, amounting to 33,000,000 for rail-roads, and one of 5,000 for the establishment of a chair of the Slavonic language at Paris. The budget of expenses for the current year was fixed at 1,188,82,334 francs, and that of receipts of 1841, at 1,141,885,166. The number of laws passed, of a general nature, was 50, and those of a local character about 80.

Paris, July 1. FRENCH COMMERCE.—Some important official statements have been published relating to the commerce of France. The tables published present the results of the year 1839, compared with 1837 and 1838, and it is considered that no useful result can be drawn from a comparison with the first of these years, since 1837 being the year when the American crisis was felt, and important branches of external commerce were diminished, it constitutes rather an exception than an exponent of regular annual results. The comparison, therefore, is confined to the two years, 1839 and 1838, and under the head of "General Commerce" (which includes every import and export,) the year 1839 presents an increase of 58,000,000f, being an increase of 10,000,000f on the imports, and 48,000,000f. on the exports. The total amount of general commerce is 1,950,000,000f. To the results classed under the head of "Special Commerce" more attention is paid. This head includes imports consumed in France, and exports produced by the French soil in French manufacture. The imports belonging to this class in 1839 amount to 650,000,000f., the exports to 677,000,000f., exhibiting, on a comparison with 1838, a diminution of 7,000,000f. in the imports, and an increase of 10,000,000f. in the exports; so that the general movement of special commerce presents an increase of 12,000,000f. This increase is regarded as far from satisfactory—indeed, almost as a decrease, on the principle that commerce, when stationary, may be said to recede by a comparison with the advance made by other nations in an equal period. The two items of import and export are examined in detail. In the first place, it is said, that the decrease of imports would have been much larger than 7,000,000f., if the provisions, which a bad harvest had compelled France to take of other nations, had been deducted, as exhibiting a result which is any thing but an exponent of commercial prosperity. Foreign cattle were imported in spite of the heavy duty which curbs their introduction; 1,000 hectolitres of grain above the quantity imported in 1838, were furnished by foreign nations in 1839. This quantity of grain is valued at 20,000,000f., and thus it is calculated that if the harvest had been as good as ordinary, the imports would not have decreased only 7,000,000f. but 27,000,000f. The importations of raw material employed by manufacturers, have seriously diminished. The amount of raw cotton imported has been even lower than in 1837, and one-fifth lower than in 1838. Silks have decreased to an equal extent, and wools also, though not to so great a degree. It was natural that the materials employed in bleaching, dying, and printing the above articles should share in their decrease, and hence the decrease has been equally felt in olive oil, nitrates, and indigo. These results, as exhibiting the state of weaving in France, are considered as of the highest importance. The materials next in importance are those combustibles and metals which form the basis of nearly every manufacture: here the results are still unfavorable, and there is a decrease in the importation of coal, iron, copper, lead, and zinc. There is, indeed, an increase in the importation of machines, but this is accounted for by the introduction of engines for the new rail-roads.

The only remarkable increase in the importation of manufactured articles has been in that of linen and hempen threads. Before the manufacture of linen thread by machinery, scarcely any was imported, but since this English invention the importation has gradually increased. The projected law for regulating the customs, proposes to raise the duty on these articles, but the expediency of such a plan is questioned. It has been observed, that while the importation of threads has increased, that of woven goods has diminished, and that the French weavers have found the large importations of thread advantageous. Hence it is argued that by restricting the importation of foreign thread, the interests of such an important branch of industry as weaving may be compromised.

Proceeding to the increase in exportations, stated at 19,000,000f., it is remarked, that if the exportation of foreign corn, caused by the temporary dearness of corn in England, be deducted, it will be shown that the chief articles of exportation have remained stationary, or even decreased. Of produce of the soil, the main exports of France are her wines and brandies, and these, compared with 1838, exhibit a decrease of more than a quarter. Of manufactured articles, silk and cotton goods, the most important of all, exhibit a decrease; woollen goods, porcelain, articles of fashion, &c remain stationary. The decrease in all these articles may be attributed chiefly, if not entirely, to the remarkable depression of the American trade.

London, July 5. The net revenue for the United Kingdom for

	Quarter ending July 5, 1839.	Quarter ending July 5, 1840.
Customs	4,871,333	5,137,934
Excise	2,570,311	2,711,951
Stamps	1,647,423	1,729,651
Taxes	1,639,372	1,647,808
Post Office	369,000	100,000
Crown Lands	40,000	42,500
Miscellaneous	14,611	4,117
Total Ord. Rev.	11,152,050	11,373,961
Imprest	301,625	297,880
Re-payments	202,462	195,995
Total Income	11,656,137	11,867,836
Increase		289,706
Dec. on Post Office,		269,000

	Year ended July 5, 1839.	Year ended July 5 1840.
Customs	19,606,561	20,267,868
Excise	12,132,971	12,182,377
Stamps	6,560,275	6,671,624
Taxes	3,730,546	3,722,848
Post Office	1,536,000	978,000
Crown Lands	185,000	162,500
Miscellaneous	94,629	77,751
Total Ord. Rev.	43,845,982	44,065,968
Imprest	486,962	413,211
Re-payments	716,488	717,086
Total Income	45,049,432	45,196,865
Increase		147,433
Dec. on Post Office,		558,000

July 15. Gen. Urrea, the leader in a late insurrection, made his escape from prison, at Mexico, put himself at the head of a party of his followers, made a sudden attack on the capital, got possession of the palace of Mexico, and made the president, Bustamente, prisoner. The president, however, soon after regained his liberty, put himself at the head of the government troops, and summoned the friends of the government to its defence. At the date of the latest intelligence from Mexico, affairs were in a state of great commotion.

Paris, July 20. *French Marine for* 1841. From the official estimate of the Minister of the Marine and the Colonies. The Military Marine is expected to protect the external commerce of the nation on every point. To do this successfully, it ought to be constantly able to exercise an active vigilance on the distant shores to which French traders direct their operations of different kinds, as some with a view to mercantile exchanges, others to enterprises in the great fisheries; to support, when necessary, well-founded claims on their part; to maintain or restore discipline on board of merchantmen, particularly when the crew is numerous, and the voyage of long duration; finally, in exploring other seas to seek to discover places where it may be possible to open new markets, either for the productions of the soil, or the varied works of industry—a result which, while extending the participation of our flag in the general movement of navigation, will also react favorably on the maritime inscription. Independently of this habitual service of protection to commercial interests of the first order, there are several other relations

under which the naval force of the state ought to be regarded: it is a powerful auxiliary for the army on land; as an instrument of observation it possesses the most favorable qualities for aiding the views of a vigilant and moderate policy in questions arising at a distance; next, and under a different order of ideas, it presents to the sciences and the arts, in return for what it owes them, the concurrence of an enlightened and indefatigable zeal.

Thus the Royal navy contributes to the progress of knowledge, favors commerce, and, in a diplomatic point of view, may frequently augment the influence of the government. Such, then, on the whole, is the mission confided to the department of the Marine and the Colonies. To be enabled to fulfil in 1841 the duties of that mission a total credit of 74,015,800f. is required.

Before indicating the intended application of this credit, we will call to recollection, that according to an ordinance of February 1, 1837, the naval force, for the peace establishment, is to consist of 40 ships of the line, 50 frigates, 180 other vessels rigged with sails, of regulated rates, and 40 steamers. One half of the ships of the line and steamers must be launched; the other half remaining on stocks ought to be forwarded to the extent of 22-24ths of preparation. The 40 steamers and the 180 sail-rigged vessels of inferior order are to be kept afloat.

Were we to suppose, contrary to all probability, the whole of such a force as this placed by a complete and simultaneous equipment on the war footing, it would present for the crews an effective of 79,000 men, with 9,300 guns mounted. Calculating upon the hypothesis of an equipment restricted exclusively to great war vessels, that is to say to the ships of the line and frigates, the effective of the crews would be 57,000 men applicable to the working of about 6,500 guns, and if we add forty steamers, that effective would amount to 60,000 men.

The number of armed vessels for the service of 1841 is kept up to 130, as in the last two budgets. But the composition of the equipments is extensively modified in what relates to steam navigation. The number of vessels which stood in the budget of 1840 at 20 has been raised to 30, and the progress in this respect the more considerable, inasmuch as the machines of several of the new vessels greatly exceed in power those hitherto employed in the French navy. These ten steamers will be substituted for ten sail-rigged vessels of a secondary class. As to the ships of the line and the frigates, the number remains the same: thus we preserve those vessels, which, while they constitute the principal force as to artillery, are at the same time the best schools for nautical instruction, and afford the most efficacious means of maintaining discipline and a true military spirit in all ranks.

The result of the equipments for the year 1841 will be thus arranged:—

SAIL-RIGGED VESSELS.

8 Ships of the line—1 of the 2d rate, of 100 guns: 2 of the 3d rate, of 90 guns; 5 of the 4th rate, 1 of 80 guns and 4 of 74 guns.
12 Frigates—2 of the 1st rate, 60 guns; 5 of the 2d rate, 52 guns; 5 of the 3d rate, 46 guns.
6 War corvettes of from 20 to 32 guns.
4 Avise corvettes of 16 guns.
13 Brigs of from 16 to 20 guns.
6 Avise-Brigs of 10 guns.
7 Gun-Brigs of 8 guns.
14 Galliots, cutters, &c., of from 6 to 8 guns.
16 Flotilla craft.

86 War vessels.

VESSELS OF BURDEN.

14 { 10 Corvettes of burden, or store ships.
4 gabarres.

STEAMERS.

30 { 2 of 450 horse power.
1 of 320 horse power.
1 (the Veloce) of 220 horse power.
4 of 220 horse power.
18 of 160 " "
4 of 120 " "

130 Total vessels.

These 130 vessels are destined to maintain useful communications, to execute orders relative to special expeditions, and for the protection of trade. They will occupy the 11 ordinary stations—namely, the coasts of the Peninsula, Brazil, South America, the Antilles, Cayenne, Mexico, the coasts of Africa, the Levant, Bourbon, Newfoundland, and Algiers.

Adhering to the provident system adopted in former years, there will be added to these 130 vessels keeping at sea, a reserve of 24 vessels—namely, 8 disposable in roadstead, and 16 in commission in port. The composition of this reserve will be according to the following statement:—

Eight disposable in Road,—2 ships of

the line; 3 frigates; 1 war corvette; 2 brigs.

Sixteen in Commission in Port,—5 ships of the line, and 7 frigates; 1 vessel of inferior rate; 3 steamers.

The effective of the crews required for the 130 vessels in active service will be 20,542 men, and for the reserve 1,922, making altogether 22,464 men.

London, July 23. British postage on letters sent to or received from foreign countries, as established by the Bill for the regulation of the duties of postage:

On all letters not exceeding half an ounce in weight, transmitted by post between the United Kingdom and foreign parts, or between any of the places out of the United Kingdom hereinafter mentioned, there shall be charged and taken the following rates of British postage, that is to say:—

	s.	d.
By packet boat between Dover or any other port in the United Kingdom and Calais, or any other part in France, a packet rate of	0	3
Between France and any place in the United Kingdom distant from Dover or other port in the United Kingdom not more than eight miles, a rate (the packet rate included) of	0	5
Between France and any place distant from Dover or other port as aforesaid, more than eight miles and not more than fifteen miles, a rate (the packet rate included) of	0	6
Between France and any place distant from Dover or other port as aforesaid more than fifteen miles, and not more than twenty miles, a rate (the packet rate included) of	0	7
Between France and any place distant from Dover or other port as aforesaid more than twenty miles and not more than thirty miles, a rate (the packet rate included) of	0	8
Between France and any place distant from Dover or other port as aforesaid more than thirty miles and not more than fifty miles, a rate (the packet rate included) of	0	9
And between France and any place in the United Kingdom distant from Dover or other port as aforesaid, more than fifty miles, or between France and London, or any place in the United Kingdom, through London, an uniform rate (the packet rate included) of	0	10
Between any part of the United Kingdom and Spain, otherwise than through France, an uniform rate of	2	
Between London and the following places, by way of France; viz. Malta, the Ionian Islands, Greece, Syria, and Egypt, an uniform rate of	0	10
Between London and Germany, by way of France	1	4
Between London and Switzerland, by way of France	1	2
Between London and Spain, by way of France	1	7
Between London and the following places, by way of France; viz. Italy, Sicily, Venetian Lombardy, Turkey, the Levant, and the Archipelago	1	7
Between London and Holland	1	4
Between London and Belgium	1	4
Between London and Switzerland	1	8
Between London and Germany	1	8
Between London and Denmark	1	8
Between London and Sweden, and other parts of the north of Europe	1	8
Between London and the following countries, through Belgium or Holland or Germany; viz. Italy, Sicily, Venetian Lombardy, Malta, the Ionian Islands, Greece, Turkey, the Levant, the Archipelago, Syria or Egypt	1	8
Between any part of the United Kingdom, and any place in the East Indies, via France, in addition to the Red Sea or Persian Gulf, packet rate hereinafter mentioned	0	10

Nevertheless all foreign letters herein rated between London and a place abroad, which shall be sent to or from any place in the United Kingdom without coming to or passing through London, shall be charged as if they had been sent from or to London; and the rates of British postage for every letter not exceeding half an ounce in weight, transmitted by packet boats, shall be as follows:—

	s.	d.
Between any part of the United Kingdom and the United States of America, an uniform rate of	1	0
Between a port in the United Kingdom and Lisbon, or any other port in Portugal	1	7
Between a port in the United Kingdom and the kingdom of Greece, or any port in Syria or Egypt, but not including letters transmitted between the United Kingdom and the East Indies	2	3

Between Suez or Bassora, or any other port in the Red Sea or Persian Gulf, and any port in the East Indies, (letters transmitted by her Majesty's Mediterranean packets to or from the United Kingdom only excepted).....	1	0
Between any of the ports or islands or places situate upon the Mediterranean Sea, the Adriatic Sea, the Archipelago, the Black Sea, in Turkey in Europe and Asia, in Spain, Portugal, Italy, France, or the Mediterranean, and upon the northern coast of Africa, whether in the Mediterranean or in the Straits of Gibraltar (not having been first brought or conveyed from the United Kingdom, or not being intended to be conveyed to the United Kingdom ..	0	6
Between any of the ports or places last aforesaid and any port or place in the East Indies, by way of the Red Sea or the Persian Gulf, in addition to the aforesaid Red Sea or Persian Gulf packet rate..... ..	0	6
Between a port in the United Kingdom and the Island of Madeira..	1	8
Between a port in the United Kingdom and any port in the Island of Cuba in the West Indies, or any port in Columbia or Mexico.	2	1
Between any port in the British possessions in the West Indies and any port in Columbia or Mexico.....	1	0
Between any port in the United Kingdom and Brazil.....	2	7
Between any port in the United Kingdom and Buenos Ayres, or any other port on the continent of South America (other than Columbia, Brazil, or Mexico).....	2	5
Between any port in the United Kingdom and any port in the Island of St Domingo.....	1	3

And in addition to the aforegoing rates (except on letters between the United Kingdom and France, and between the United Kingdom and Spain, otherwise than by way of France, and between the United Kingdom and the United States of America, there shall be paid on every such letter as aforesaid an inland rate of postage of twopence for the distance any such letter shall be conveyed within the United Kingdom; and on every letter so transmitted as hereinbefore mentioned, exceeding half an ounce in weight, there shall be charged and taken progressive and additional rates of British postage, according to the scale of weight and number of rates in this Act contained as to letters, estimating and charging each additional rate at the amount hereinbefore directed to be charged and taken on every letter so transmitted not exceeding half an ounce in weight, and charging the inland rate as aforesaid, but so that letters herein rated between London and a place abroad shall not be charged any inland rate for the distance between London and the outport at which the packet boats conveying the same shall be stationed.

And on every letter between foreign countries or between any foreign country and any of her Majesty's colonies transmitted through the United Kingdom, there shall be charged and taken for the distance any such letter shall be carried within the United Kingdom (in addition to the packet or ship letter rates to and from the United Kingdom, to which such letter will be liable under this act), any such inland rate or rates of postage not exceeding one shilling on any letter not being more than half an ounce in weight, as the Commissioners of her Majesty's Treasury may, by warrant under their hands, direct; and on any letter exceeding that weight, progressive and additional rates of British postage according to the scale of weight and number of rates in this Act contained as to letters, estimating and charging each additional rate at the sum which any such letter would be charged with under this schedule, if not exceeding half an ounce in weight; but so that no such letter be transmitted through the United Kingdom, unless the the British postage chargeable thereon be paid before the same be sent out of the United Kingdom, or unless there be a treaty between the Postmaster-General and the Post-Office of the foreign country from which it shall have been forwarded, or to which it shall be addressed, for collecting and accounting for the British postage on such letters.

London, July 23. The act of parliament, to re-unite the provinces of Upper and Lower Canada, and for the government of Canada, received the royal sanction. The act authorizes the Queen, with the advice of her privy council, to declare by proclamation, that the said provinces, from a certain day to be named, which shall be within fifteen months from the passing of the act, shall form one province, under the name of the Province of Canada. By this act a large number of acts

relative to the government of the Canadas are repealed. After the re-union there is to be but one legislative council, and one assembly. Her Majesty is to have power within the province, by and with the consent of the legislative council and assembly, to make laws for the peace, welfare and good government of the province. All acts duly passed and assented to, to be valid to all intents and purposes within the province. To compose the legislative council, the Queen may, before the time appointed for the first meeting of the council and assembly, and from time to time afterwards, authorize the governor, in her name to summon such persons, not fewer than twenty, as her majesty shall think fit, they being 21 years of age, and natural born or naturalized subjects, to be members of the legislative council for life, subject to certain provisions for vacating the same. The governor of the province is to have power to appoint, and to remove the speaker of the legislative council. Ten members, including the speaker, are required to make a quorum. The legislative assembly is to consist of an equal number of representatives from the parts of the province now constituting the two provinces. Each of the counties and ridings of Upper Canada now entitled to be represented in the assembly, is to be entitled to be represented by one member. The counties of Halton, Northumberland and Lincoln, are to be divided into two ridings each, and each riding to be represented by one member. The city of Toronto is to have two members, and Kingston, Rockville, Hamilton, Cornwall, Niagara, London, Bytown, one each. The counties of Lower Canada are to have one member each, except eight of the smaller counties, which are united, in pairs of two each, so as to form four new counties, each with a right to one member. Quebec and Montreal are to have two members each, and Three Rivers and Sherbrooke, one each. The Governor is to fix the time and place of holding elections. The legislature of the province may pass acts changing the apportionment of representatives between the counties and towns, in each of the two parts of the province, and also changing the division into counties, parishes, and cities, but the number of representatives cannot be changed, unless the bill for such change pass, at the second or third readings, by majorities of two-thirds of the members of each branch. The governor, for the time being, is empowered to fix the place or places within any part of the province, and also the time, for holding the first and every other session, of the legislative council and assembly, and also to change the places and times of holding such sessions, as he may judge most consistent with general convenience and the public welfare; and also to prorogue or dissolve the said assembly whenever he shall deem it expedient. There shall be a session every year, not more than twelve months to intervene between the sessions, and the first session shall be within six months from the date of the union. The members of the assembly are to choose their speaker. Twenty members, including the speaker, will form a quorum. The speaker has the casting vote, when the votes are equal. Bills assented to by the governor, may be, within two years, disallowed by the Queen, and, in such case, shall be made null by proclamation. All writs, proclamations, journals of the legislative assembly, &c., are to be in the English language only. All laws, statutes, and ordinances now in force in the two provinces, are to remain in force until altered by law, except so far as they are changed by the present act. The courts of civil and criminal jurisdiction within the two provinces, and their powers and duties, remain underanged. All duties and revenues of the two provinces shall form one consolidated revenue fund, for the service of the province of Canada. Out of this revenue there shall be payable annually to her majesty, for defraying the expenses of the administration of the government, and of justice, £45,000 per annum, and for the expenses of other branches of administration, the further sum of £30,000 per annum. Out of these sums are to be paid, until altered by an act of the legislature, certain specified salaries, amounting, with some reservations for pensions and contingencies, to the whole £75,000; among which are, a salary to the Governor of £7,000; Lieut. Governor, £1000; Chief Justices of Upper and Lower Canada, £1500 each; seven Puisne Judges of the two provinces, £800 each; with specific provision for secretaries and other officers. There are various provisions in the act for limiting and regulating the effect of these appropriations. There are other minor provisions in the act, but the above summary exhibits all its important features. It has just been received and published in the Canadas. The time for its going into effect has not yet been announced.

London, July 24. *West India Mails.* The contract of the "Royal Mail Steam Packet Company," with the Commissioners has been printed, in return to an order of the House of Commons The company covenant to keep a sufficient number, (not less than 14) of good and sufficient steam vessels, which shall be able to carry guns of the largest calibre now used on board of steam vessels of war, supplied with engines of not less than 400 collective horse power, as well as with men, apparel. &c. and be of at least 1,000 tons burden. One of these vessels is to leave a port in the British Channel twice in every calendar month, and proceed to Barbadoes as soon as the mails are on board. After an interval not exceeding six hours from her arrival there, she is to proceed to Grenada, and after remaining a time not exceeding 12 hours, go with the mails on board to Santa Cruz, thence to St. Thomas's, thence to Nicola Mole in Hayti, thence to Santiago de Cuba, and thence to Port Royal in Jamaica. After remaining at Port Royal for an interval not exceeding 24 hours, the vessel, after delivering her mails and receiving others, is to proceed to Savannah la Mer, and after a delivery and receipt of mails there, to Havannah in Cuba. After an interval not exceeding 48 hours, she is on her return to proceed from Havannah to Savannah la Mer, thence to Port Royal, thence to Santiago de Cuba, thence to Nicola Mole, thence to Samana in Hayti, delivering and receiving mails at each place, care being taken that she shall always arrive at Samana, after performing her voyage from Barbadoes, on the 22d day after the arrival of the mails at Barbadoes from England. From Samana she is to make the best of her way back to England. Immediately on the arrival at Barbadoes, of every steamer employed under the contract, another of such steam vessels is to proceed with her mails from Barbadoes successively to Tobago, Demerara, Berbice, and Paramaribo. The period of delay at Paramaribo is not to exceed 48 hours, and then the vessel is to proceed to Berbice, Demerara, Tobago, Grenada, and Barbadoes, always arriving at Barbadoes in time to depart immediately for Tobago on the arrival of one of the vessels at Barbadoes from England. On the arrival at Grenada of a mail from England, another of the steam vessels is to proceed from Grenada successively to St. Vincent, St. Lucia, Martinique, Dominica, Guadaloupe, Antigua, Montserrat, Nevis, St. Kitt's, Santa Cruz, Tortola, St. Thomas's, St. Juan's (in Puerto Rico) Samana, Curacoa, Porto Cabello, La Guayra, Trinidad, and thence back to Grenada, so as always to be ready to depart thence with the mails on their arrival from England. Another vessel, likewise, on the arrival at Grenada of the mails from England, is to proceed with the mails successively to the port of Spain (in Trinidad), La Guayra, Porto Cabello, Curaçoa, Samana, St. Juan's, St. Thomas's, Tortola, Santa Cruz, St Kitt's, Nevis, Montserrat, Antigua, Guadaloupe, Dominica, Martinique, St. Lucia, St. Vincent, and thence back to Grenada, so as to be ready to depart immediately on the arrival of a mail from England. On the arrival of any vessel at Curaçoa from Grenada, a sailing vessel is to be ready then to proceed from Curaçoa to Santa Martha, and thence to Carthagena, where she is to remain 24 hours, and thence to return to Santa Martha and Curaçoa. On the arrival of a mail from England at Nicola Mole, another sailing vessel is to proceed thence to the Bahama Islands, and after remaining at New Providence for not more than 72 hours, return to Nicola Mole in time to meet the steam vessel. On the arrival of the mail from England at Port Royal, another steam vessel is to proceed thence to Charges, Carthagena, Santa Martha, and thence back to Port Royal in time to meet the return vessels from Havannah. On the arrival of the mails from England at Savannah la Mer, another sailing vessel is to proceed thence to Trinidad de Cuba and Belize (in Honduras) where after remaining 48 hours, she is to return to Savannah la Mer by the same route. On the arrival at Havannah of the mails from England, another steam vessel is to proceed thence with the mails to Vera Cruz, Tampico, Mobile, or such other port as the commissioners shall determine, returning from the last port to Havannah in time to depart for Vera Cruz immediately on the arrival of the English mail, and another to the Gulf of Mexico, Tampico, and Vera Cruz, and then back to Havannah to meet the mails. Another steam packet, on the arrival of the mails from England at Havannah, is to proceed to Matanzas in Cuba, and to New York, stopping at intermediate ports to be named by the commissioners, and thence to Halifax, returning back to Havannah, by the same route on the arrival of the mails from England. The contract is to commence on the first of December, 1841, or at an earlier period, if mutually agreed,

and to continue in force for ten years from the first day on which the first vessel shall put to sea for Barbadoes, and for a longer period, unless determined by twelve months' notice in writing.

July 26. At 1 o'clock in the morning, the steamboat North Carolina, belonging to the Wilmington and Roanoke railroad company, while on her voyage from Wilmington to Charleston, with passengers and the mail, when 60 miles from Wilmington, met the steamboat Governor Dudley, belonging to the same company, from Charleston bound to Wilmington, and through the carelessness of the mate of the former, the two boats came in collision with each other, with a tremendous shock, both being under way at the rate of ten or twelve miles an hour. The bow of the Gov. Dudley struck the North Carolina between the gentlemen's and the ladies' cabin, and damaged her so much that in about ten minutes she sunk. The passengers of both boats, at the time, were in their berths. Those of the North Carolina were transferred to the Gov. Dudley, and were all saved, with the loss of their baggage and effects. Among the passengers were several members of Congress, one of whom, Mr. Dawson, of Georgia, it was said, lost $15,000 which were in his trunk. The Gov. Dudley was considerably injured, but after remaining until morning in the vicinity of the wreck, she proceeded on her voyage to Wilmington, where she safely arrived with the passengers of both boats.

London, July 31. For lighting London with gas there are eighteen public gas works, twelve public gas companies; 2,800,000*l.* capital employed in works, pipes, tanks, gas-holders, and apparatus; 450,000*l.* yearly revenue derived; 180,000 tons of coal used in the year for making gas; 1,460,000,000 cubic feet of gas made in the year; 30,400 public or street consumers, about 2,650 of these are in the city of London. Three hundred and eighty lamp-lighters employed; 176 gas-holders, several of them double ones, capable of storing 5,500,000 cubic feet; 890 tons of coal used in the retorts on the shortest day, in twenty-four hours; 7,120,000 cubic feet of gas used in the longest night, say the 24th of December; about 2,500 persons are employed in the metropolis alone in this branch of manufacture; between 1822 and 1827, the quantity nearly doubled itself, and that in five years; between 1827 and 1837, it doubled itself again.

The Thames Tunnel.—The whole of the wharves, buildings, dwelling-houses, sheds, and two public houses, in High-street, Wapping, which covered an area of about 200 feet, by 73 in depth, purchased for the formation of the footway descent into the tunnel, have been entirely removed, and preparations for sinking the shaft on the north shore upon the site of the buildings has already commenced. The wharf will be extended about 24 feet into the river, and workmen have been for some time employed in pile drawing and forming an embankment, on a portion of which the shaft will be formed. The works below are proceeding with great activity, and that part of the tunnel already completed is in a very sound state. There is no fear of any further irruptions, as the excavators have approached so near the north shore that the most dangerous portion of their labors can be carried on when the tide has receded, and there is no water over them. The Thames tunnel will be open for foot passengers early next spring.

August 1. Steam ship Britannia sailed from Boston at 2 o'clock P. M., for Liverpool, with 40 passengers, and about as many more for Halifax. She left Halifax for Liverpool at 7 o'clock P. M. on the 4th, with 30 additional passengers. The British Queen sailed from New York on the same day for London, with 135 passengers.

August 3. There was a general election in the three adjoining states of Indiana, Illinois, and Missouri. In Indiana the election resulted in the choice of the whig candidates for Governor, and members of both branches of the legislature by large majorities. In Illinois members of the legislature only were chosen. A Van Buren majority of both branches is supposed to be chosen. In Missouri also the election terminated in favor of the Van Buren candidates for Governor, Lieut. Governor, a majority of members in both branches of the legislature, and also for members of congress. In Illinois the election of members of congress was deferred, on the mistaken supposition, that by delaying the choice until a new distribution shall be made, according to the census of the present year, the state will be entitled to an increased number of representatives in the next congress.

August 4. As the steamer Erie, Capt. Titus, was ascending the Detroit river, about three miles above Malden, her steam chamber burst, and six persons were badly scalded, four of whom were

of the crew of the boat. Mr. Baby, Sheriff of the Western District, N. C., in the alarm of the moment jumped overboard and was drowned.

August 5. The election of state officers in Kentucky closed, having been continued on three successive days. The result is stated unofficially to be the choice of Mr. Letcher, the whig candidate, by 54,449 votes, in opposition to Mr. French, who had 39,158. The new legislature is stated to consist of 23 whigs and 14 Van Buren members, there being one vacancy, and the house, of 76 whigs, and 24 Van Buren members.

August 9. Steam ship Great Western arrived at New York at 10 o'clock A. M. in 14 days 20 hours from Bristol. She made her last passage out to Bristol in 13 1-2 days. She brought news of a slight fall in the cotton market, in consequence of large importations from the United States. A bill had been brought into parliament, and was subsequently passed, appointing Prince Albert to be Regent, in case of the death of the Queen, leaving an infant heir to the crown. The act contains three restrictions on the exercise of the royal prerogative by the regent, viz. giving the royal consent to any act altering the succession to the throne, and interfering with the doctrine and discipline of the established church, or with the privileges of the church of Scotland. Cabrera, the Carlist leader, had withdrawn from Spain, and taken refuge in France. The Queen of Spain was at Barcelona. A schism had arisen between her and Gen. Espartero, which threatened serious consequences. Lucien Bonaparte, Prince of Canino, died at Viterbo, June 27. The Prince de Joinville sailed from Toulon for St. Helena, in the frigate Belle Poule, on the 7th of July, for the purpose of bringing to France the remains of Napoleon.

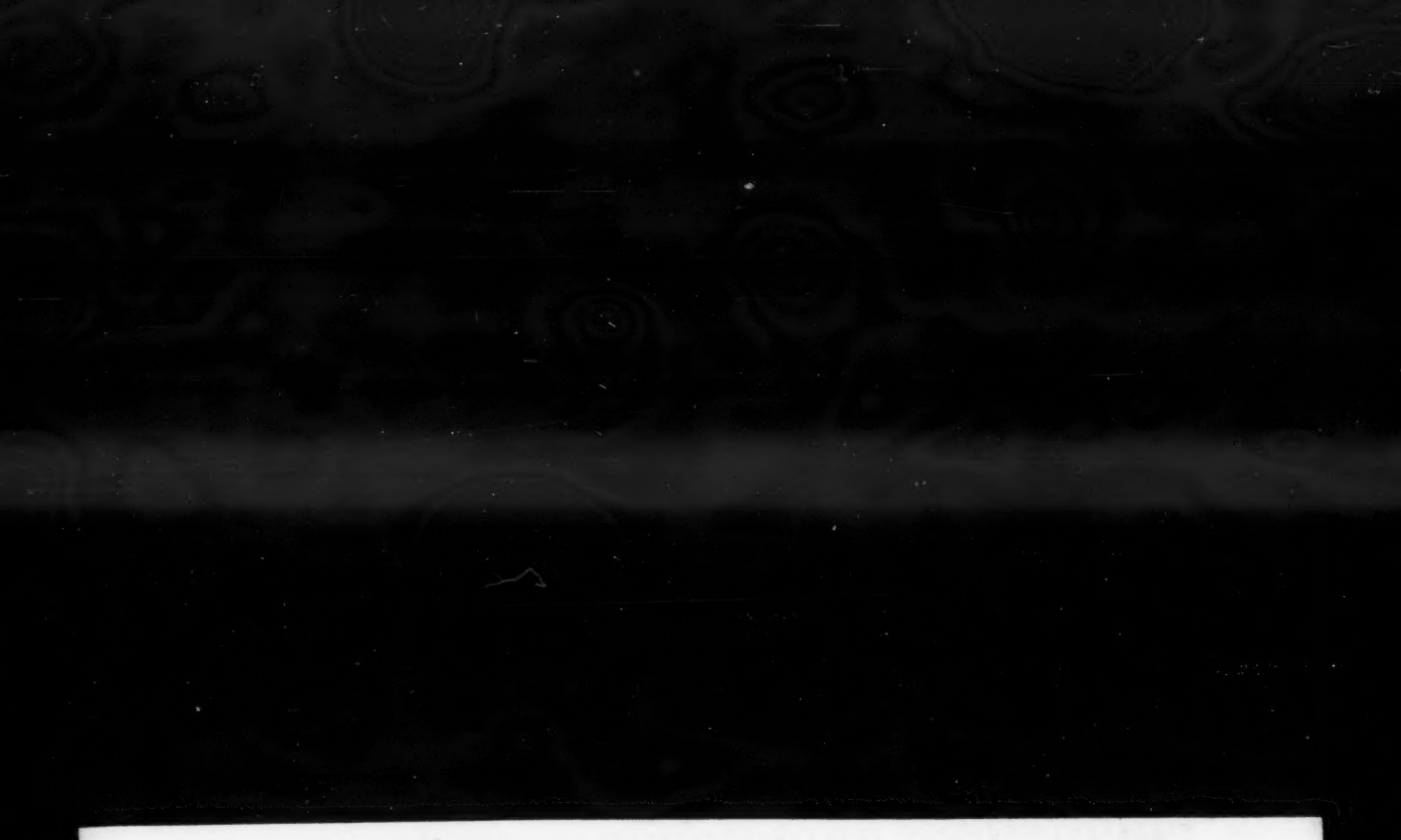
August 13. On this day and the two preceding Thursdays, the election was held in the counties of North Carolina, for the choice of Governor and members of the legislature. The result is reported to be the choice of Mr. Morehead, the whig candidate for Governor, by a majority of over 8000 votes, and of a majority of 6 whig members in the senate, and of 24 whigs in the house of commons.

August 17. Steam ship President arrived at New York at 4 o'clock P. M. in sixteen days from Liverpool, bringing London news to July 31. She is the largest of the transatlantic steamers.

August 18 Steam ship Acadia, the second of the large class of ships of Mr. Cunard's mail line, arrived at Boston in 12 days 18 hours from Liverpool, and 34 hours from Halifax. Before going into Halifax she was delayed 10 hours by fog. She brought 63 passengers from Liverpool, and 13 more from Halifax. She brought London papers to Aug. 1. The most important news brought by this arrival is, that the four great powers, England, Austria, Russia and Prussia, had agreed to the terms of a treaty with the Porte, for the settlement of the matters in dispute between that court and Mehemit Ali, viceroy of Egypt, in which France did not concur, and that the government of France had manifested strong dissatisfaction at the proceeding, and had in consequence ordered a large increase of her armament, both in the land service, and in the navy. These proceedings, from an apprehension of a disturbance of the peace of Europe, had caused a decline of about 4 per cent. in the French funds, and 1 per cent. in the English. The Egyptian government had sent a strong reinforcement of troops to Syria, for the purpose of checking the insurrection there which had become formidable. There had been a popular movement in Barcelona, and the Queen regent of Spain had been required to dismiss her ministry, and appoint a new one more favorable to the views of Gen. Espartero. The French Admiral Baron Mackau had just sailed from Rochefort with a strong reinforcement of the squadron at Buenos Ayres, and with full powers to treat for the settlement of the differences with that government. The festival of the three days in July, passed off at Paris without tumult.

August 21. The steam tow-boat James Gibbon, Capt. Skinner, was blown up by the explosion of her boiler, in James river, 18 miles below Richmond, and soon afterwards sunk. Two of the hands were blown off and lost. The wife, mother-in-law, three children, and servant of the Captain, were scalded, and one of the children died soon after. The persons on board were saved by getting on board a lighter which the boat had in tow.

August 25. We learn from the Cape of Good Hope, that the British discovery ships, Erebus and Terror, sailed from Simon's Town, April 6, intending to sail by Crozet's Island and Recquelan's Land to Van Dieman. They proposed there to set up their observatory, and afterwards to explore the coasts of Australia and New Zealand, and in January and February to penetrate to the south, to endeavor to fix the point of the antarctic magnetic pole, and make other discoveries.



Solway Frith
Newcastle and Carlisle
Carlisle
Warwick
Maryport
Newcastle
Shields
Sunderland
Durham
Stockton and Darlington
Stocton
Great North of England
N. Allerton
Lancaster
Fleetwood
Lancaster & Preston
Preston
Bradford
Leeds
Leeds & Selby
Hallifax
Manchester & Leeds
R. Mersey
Bolton
North Union
LIVERPOOL
MANCHESTER
Birkenhead
Stockport
Warrington
Sheffield
Chester
Macclesfield
C. & C.
Crewe
Grand Junction
North Midland
Derby
Stafford
Shrewsbury
Litchfield
Tamworth
Birmingham & Derby
Midland Counties
Wolverhampton
Birmingham
Hampton
Coventry
Rugby
Warwick
Gloucester
Worcester
Hereford
Birmingham
Cheltenham
Gloucester
Oxford
Great Western Railway
Llandaff
R. Severn
Bristol
Swindon
Chippenham
Bath
Reading
London & South Western
Salisbury
Winchester
Bristol and Exeter
Southampton
Exeter
Bridport
Poole
Dorchester
I. of Wight
Dartmouth

RAIL ROADS OF ENGLAND.
Shields
Sunderland
Stocton
Whitby
Pickering
York
Selby
Hull & Selby
Hull
Humber R.
Rotherham
Lincoln
Louth
Nottingham
Boston
The Wash
Leicester
Lynn Regis
Peterborough
Norwich
Yarmouth
Northampton
Cambridge
London and Birmingham
Ipswich
Eastern Counties
Warwick
Bishop Stortford
Northern & Eastern dist.
Watford
Chelmsford
Brentwood
Willingford
LONDON
Great Western
Thames R.
Windsor
Greenwich
Croydon
Chatham
Ramsgate
Western R.
Epsom
Canterbury
South Eastern & Dover
Dover
London & Brighton
Shoreham
Brighton
10 Miles
50
100